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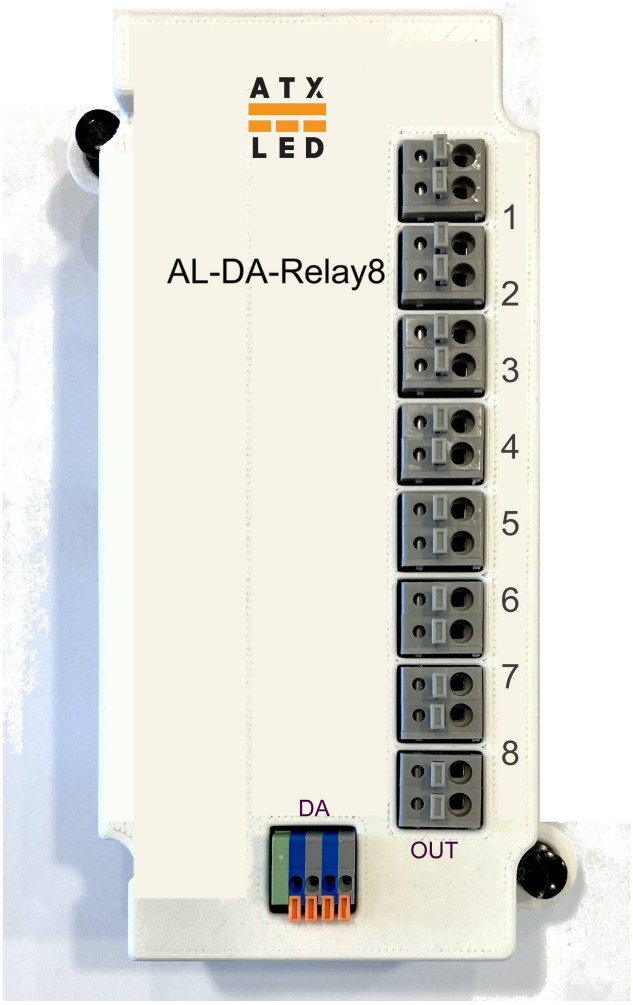
AL-DA-Relay8

General Purpose IO module



Product Description - Output device for DALI

This device has these features

- 8 voltage sensing or contract sensing inputs
- 8 isolated outputs with 60v and 1 amp each

Using these features – each input can:

- create a DALI individual address command
- create a DALI Group command
- trigger a DALI scene be recalOutput.
- the above can be mixed
- using our ZWD software package – each input can be configured to “trigger” complex actions

Specifications

	DA pins - DALI bus – 8 ma max
Power requirements	
Input Voltage (DALI bus)	14 to 24 volts – (DALI Bus)
Output Driver ability	60v AC/DC output solid state isolated relay AL-DA-Relay8 uses the AQY212GS with On/Off only and 1000 mA, 0.1 ohm
Power consumption	64 milliwatts @ 15 volts plus the
Protection	Reverse protection and static protection on all pins
Static Electricity	Ground Metal plate to protect from Static Discharge – please ground it.
Operating Temperature	0°C ~ 50°C
Size	Sml standard 70 mm x 147mm x 30mm plus 2x 10mm interleaving tabs on the 70mm side
Receive Addressing	DALI master assigns the address
Transmit addressing	DALI standard 8 and 16 bits.
DALI BUS interface	DA Bus In and Out – 300 mA max AWG 18-24 gauge wire, spring terminals
Connectors	DALI KF141V type – color coded Output – KF246 sping loaded connectors

Powering the AL-DA-Relay8

Power the switch via the DA pins, it needs about 1.5 mA to operate, plus about 2 mA for each output that is fully on, minimum 13 volts. Connect your powered DALI bus to the DA Gray and Blue pins (polarity is not significant). Our implementation allows multiple masters – we use collision detection to avoid conflicts on the bus.

Outputs from the AL-DA-Relay8

The AL_DA-Relay8 has 8 high power AC or DC 1000 mA solid state On/Off relays with 60 volt tolerance when off. The Relay outputs are control by DALI ARC commands with Full ON, Full OFF only

DALI Operation – Base Address

Using any DALI master, assign the AL-DA-Relay8 a DALI address. This is not the address of the outputs, this is the address of the module that controls the outputs. At this address the following functions are supported

- Set Output on time in seconds, including always ON
- Change from default sequential individual address to any address
- Change from default sequential individual address to any group or scene
- reset the device to defaults

The device responds to the provisioning commands from a DALI controller. In order for individual, scenes and group addressable functions to work, a 'short' address [0 thru 63] needs to be assigned. This can be done by a DALI Master such as the ATX LED Hub. Once a short address is assigned – the device can be understood to operate as nine devices in one. This is only used to write and store configuration commands. A DALI master can write the configuration commands using the DALI write user memory commands.

Advanced Individual Output Programming

Using memory locations 21 thru 36 addressed by the DALI protocol in the AL-DA-Relay8, we can assign a function and address to each Output.

Mode Bits: (bank address 19 + input*2)

7	6	5	4	3	2	1	0
	OUTPUT Mode A	OUTPUT Mode B					

Output Mode	Response	Dimming	On Time	DALI 160 command
A=0, B=0	N/A	-	-	
A=0, B=1	N/A			
A=1, B=0	On/Off	None		Responds with Level sent
A=1, B=1	On/OFF	None	See DALI command 46	No Response

Note: DALI command 46, when set to 15 – there is no OUTPUT timeout, they stay on, otherwise the ON time is according to DALI standards.

Address: (bank address 20 + input*2)

7	6	5	4	3	2	1	0
		SA5	SA4	SA3	SA2	SA1	SA0
				G3	G2	G1	G0
				S3	S2	S1	S0

OUTPUT timeouts on the AL-DA-Relay8

There are 8 OUTPUTs. The ON time is programmable, default is always on – then the OUTPUT turns off. Set the DALI command “Fade Time” using the base address to set the ON time. See Brightness for ON/Off/Dim levels.

OUTPUT brightness – On/Off

The OUTPUTs can be simply On or Off with no dimming. If an ARC Level is sent to the address, the OUTPUT will be turned On for XX seconds if the ARC level is non zero. Please do not set any other option.

DALI Commands Supported
Base Address

Notes: * = must be sent twice in 100ms,

ARC	ARC level 0-254	See OUTPUT brightness if Remote
32	Reset to defaults (don't change Short Address)	
42	Set all 8 inputs to this Max level	Default 254
43	Set all 8 inputs to this Min level	Default 0
46	Set OUTPUT On Time	See DALI fade time table 15 = always on

128	Set Short Address		
129	Enable Memory Write		
144	Read Status		
145	Ping address	255	
147	Query On/Off of input # from DTReg2		
149	Query reset state		
150	Query missing short address	255 is missing	
151	Dali Version	1	
152	Read current DTReg		
153	Query DALI ballast type supported	6	
155	Query power fail status	255 if rebooted	
156	Query DTReg1		
157	Query DTReg2		
160	Query ARC Level of input # from DTReg2		
161	Query Max level of input # from DTReg2		
162	Query Min level of input # from DTReg2		
165	Query Fade Time	Setting * 16	
166	ATX OUTPUT HW Type	10	
194	Query Random High bits		
195	Query Random Middle bits		
196	Query Random Low bits		
197	Query Memory Bank address DTR1:DTR		
	Global DALI commands		Hex
256	Terminate		A1
257	Set DTR		A3
258	Initial Addressing Mode		A5
259	Randomize		A7
260	Compare Random Address		A9
261	Withdraw from Random Addressing		AB
264	Set High Byte		B1
265	Set Middle Byte		B3
266	Set Low Byte		B5
267	Set Short Address if match		B7
268	Query Short Address		B9
269	Query Long Address Match		BB
273	Set DTReg1		C3
274	Set DTReg2		C5
275	Write Data at Memory Bank DTR1:DTR	Send confirm	C7
276	Write Data at Memory Bank DTR1:DTR	no response	C9

Memory Bank 0

Address	Bank 0 Name	Bank 0 Value
0	Bytes per Bank (minus 1)	63
1	Checksum	Calculated
2	Number of Banks (minus 1)	3
3	UPC code – msb	722512407367
4	UPC code	
5	UPC code	
6	UPC code	
7	UPC code	
8	UPC code – lsb	
9	FW Version	
10	HW Version	
11	Serial Number – msb	Assigned by Master
12	Serial Number	
13	Serial Number	
14	Serial Number – lsb	
16	# of inputs	1, 2, 3, 4, or 8
21-36	Input Mode	See table
37-63	User data	

Memory Bank 1-3

Address	Name	Value
0	Bytes per Bank (minus 1)	63
1	Checksum	Calculated
2	Number of Banks (minus 1)	3
3-63	User Storage	

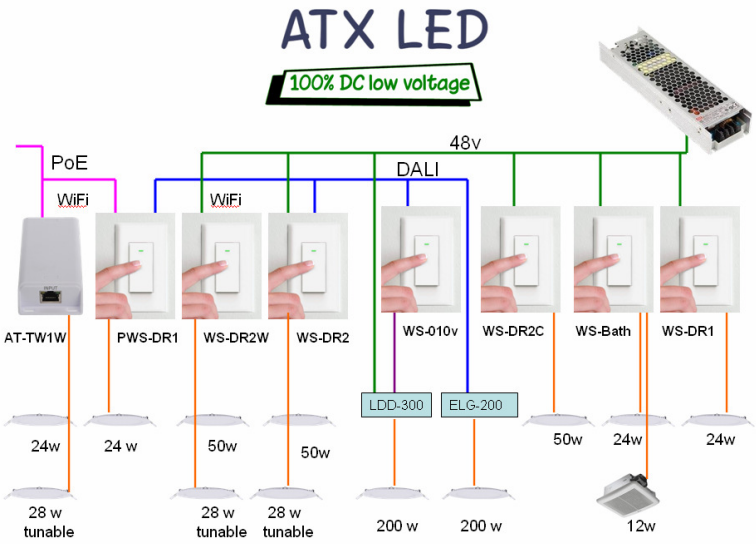
Memory Bank 4 (read only)

Address	Name	Value
3	Up Time	Hours / 256
4	Up Time	Hours (8 years max)

Advanced individual Input Modes

DALI Commands Supported
at address/groups assigned to inputs

ARC	Copy ARC Level for 3-way processing for Address, Groups, Broadcast	
0	Status OUTPUT Off	
1	Status OUTPUT UP 8 steps	
2	Status OUTPUT Down 8 steps	
3	Status OUTPUT UP one step but don't turn on	
4	Status OUTPUT Down one step but not off	
5	Status OUTPUT Set to MAX level	
6	Status OUTPUT Set to Min level	
7	Status OUTPUT Down one step and Off if needed	
8	Status OUTPUT Up one step or on if needed	
33	Save level in DTReg	
42	Store DTR as new Max Level	
43	Store DTR as new Min Level	
96-111	Add to Group	For 3-way sync
112-127	Remove from Group	For 3-way sync
171	Query presence of AL-DALI-IO16 at this address, report level	
172	Query the DALI short address of the Relay8 hosting this address	
257	Load DTR	



Ordering part numbers

Model
AL-DA-Relay8