CE

FEATURES

- Input DC: 12/24/48 Vdc (Supply Voltage range 10,8Vdc – 53,3Vdc)
- N°4 Low voltage "Relay Driver" output to command external power relays
- N°4 Analog output 0-10V / 1-10V to command Power Supplies with DIM Function or Led Driver and Dimming device 0/1-10V
- N°1 Channel Status LEDs indicate whether a load is ON or OFF
- BUS Commands: DMX512-A+RDM, DALI, MODBUS
- Local Commands: Push Buttons N.O. / 0-10V / 1-10V / Potentiometer
- Local Extra-Command Push Button N.O. for group control of output
- Master & Slave Function (For DMX and DALI version)
- Adjusting the minimum value of the analog "0/1-10V" output
- Extended temperature range
- 100% Functional Test– 5 Years warranty

→ For the whole and updated **Device Manual** refer to producer's website: http://dalcnet.com

➢ PRODUCT CODE DIMMER CONVERTER

CODE	Power Supply	Output	Channel	Command
ADC1248-4CH-DMX	12/24/48 V DC	4x 0-10V / 1-10V 4x Relay Driver 1x Channel status LED	4 Analog 4 Relay Driver	DMX 4x Push Buttons N.O. / 0-10V / 1-10V / Potentiometer Master Local Command: 1x Push Button N.O.
ADC1248-4CH-DALI	12/24/48 V DC	4x 0-10V / 1-10V 4x Relay Driver 1x Channel status LED	4 Analog 4 Relay Driver	DALI 4x Push Buttons N.O. / 0-10V / 1-10V / Potentiometer Master Local Command: 1x Push Button N.O.
ADC1248-4CH-MODBUS	12/24/48 V DC	4x 0-10V / 1-10V 4x Relay Driver 1x Channel status LED	4 Analog 4 Relay Driver	MODBUS 4x Push Buttons N.O. / 0-10V / 1-10V / Potentiometer Master Local Command: 1x Push Button N.O.

➢ PROTECTIONS

OTP	Over temperature protection[1]	✓
OVP	Over voltage protection[2]	✓
UVP	Under voltage protection[2]	✓
RVP	Reverse polarity protection[2]	✓
IFP	Input fuse protection[2]	✓
SCP	Short circuit protection	✓
CLP	Current limit protection	✓

[1] Protection on the control logic and analog output
[2] Protection on the Relay Driver output

➢ REFRENCE STANDARDS

EN 61347-1	Lamp controlgear - Part 1: General and safety requirements
EN 55015	Limits and methods of measurement of radio disturbance characteristics of electrical lighting and similar equipment
EN 61547	Equipment for general lighting purposes - EMC immunity requirements
IEC/EN 62386-101	Digital addressable lighting interface - Part 101: General requirements - System
IEC/EN 62386-102	Digital addressable lighting interface - Part 102: General requirements - Control gear
IEC/EN 62386-207	Digital addressable lighting interface - Part 207: Particular requirements for control gear – LED modules (device type 6)
ANSI E 1.3	Entertainment Technology - Lighting Control Systems - 0 to 10V Analog Control Specification
ANSI E1.11	Entertainment Technology - USITT DMX512-A - Asynchronous Serial Digital Data Transmission Standard for Controlling Lighting Equipment and Accessories
ANSI E1.20	Entertainment Technology-RDM-Remote Device Management over USITT DMX512 Networks
-	MODBUS APPLICATION PROTOCOL SPECIFICATION V1.1b

➢ TECHNICAL SPECIFICATION

FEATURES DIMMER CONVERTER	
Supply Voltage “Vin”	Min: 10,8 Vdc .. Max: 53,5 Vdc
Analog Output	4 0/1-10V output
Realy Driver Output	4 Relay Driver Output
Output status	1 channel status LED indicate whether a load is On or OFF
Thermal shutdown	150°C[3]
Storage Temperature	Min: -40 .. Max:+60 °C
Ambient Temperature[3]	Min: -40 .. Max:+60 °C
Protection grade	IP10
Wiring Buttons & Bus	1.5 mm^2 solid – 1 mm^2 stranded – 30/14 AWG
Wiring Power, Out relay driver & Out 0/1-10V	2.5 mm^2 solid – 1.5 mm^2 stranded – 30/12 AWG
Mechanical Dimension	106 x 91 x 62 mm – DIN RAIL 6M
Packaging Dimension	156 x 124 x 71 mm
Weight	205g

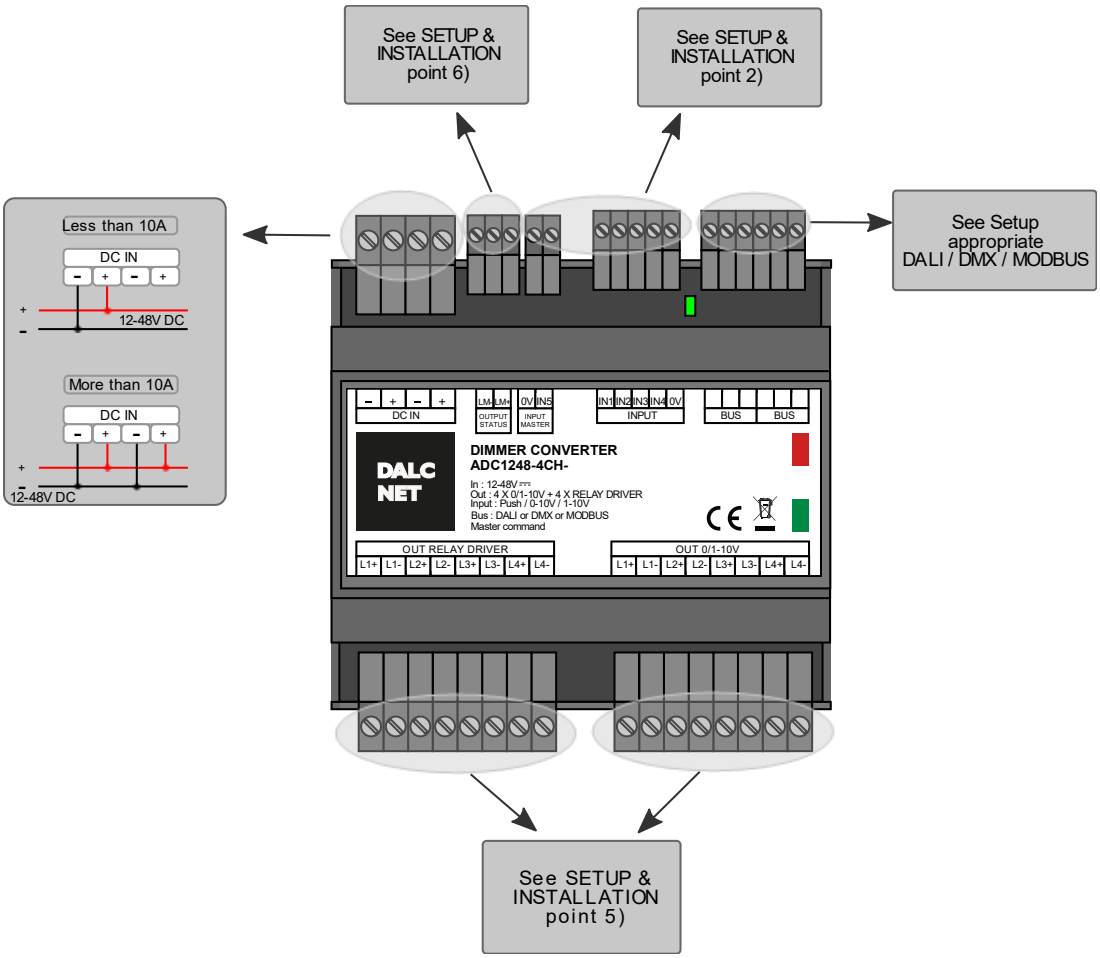
FEATURES RELAY DRIVER OUTPUT	
Output Voltage	=Vin[4]
Output Current	Max 500mA per channel[5]

FEATURES ANALOG OUTPUT 0/1-10V	
0-10V – Sink or Source Current	10mA/ch[6]
1-10V – Sink or Source Current	10mA/ch[6]

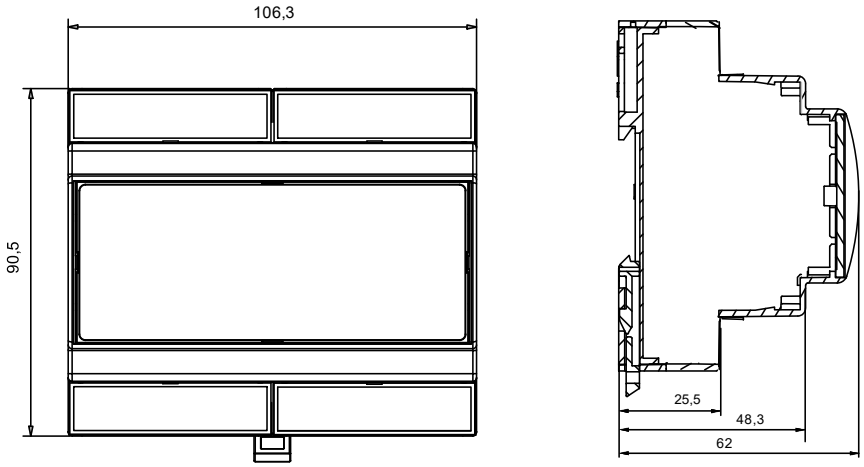
FEATURES ANALOG INPUT 0/1-10V	
1-10V – Source Current	0,5mA

[3] Thermal shutdown on the Relay Driver outputs.
[4] Maximum switching voltage to relay, must be dimensioned to power supply of DIM CONVERTER.
[5] Maximum value, dependent on the ventilation conditions.
[6] The analog outputs 0/1-10V are SINKING/SOURCING, it is possible to control devices with command input both 0-10V that 1-10V

➢ **INSTALLATION**

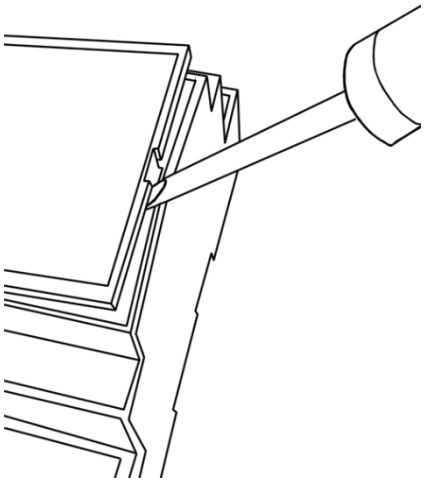


➢ **MECHANICAL DIMENSION**
(without connectors)



➢ OPENING THE COVER

For the Dip-switch and selectors configuration it is necessary to pull up the cover of the device. See the picture.



➢ TECHNICAL NOTES

Installation:

- Installation and maintenance must be performed only by qualified personnel in compliance with current regulations.
- The product must be installed inside an electrical panel protected against overvoltages.
- The product must be installed in a vertical or horizontal position with the cover / label upwards or vertically; Other positions are not permitted. It is not permitted to bottom-up position (with the cover / label down).
- Keep separated the circuits at 230V (LV) and the circuits not SELV from circuits to low voltage (SELV) and from any connection with this product. It is absolutely forbidden to connect, for any reason whatsoever, directly or indirectly, the 230V mains voltage to the bus or to other parts of the circuit.

Power Supply:

- For the power supply use only a SELV power supplies with limited current, short circuit protection and the power must be dimensioned correctly. In case of using power supply with ground terminals, all points of the protective earth (PE = Protection Earth) must be connected to a valid and certified protection earth.
- The connection cables between the power source "low voltage" and the product must be dimensioned correctly and they should be isolated from every wiring or parts at voltage not SELV. Use double insulated cables.

Command:

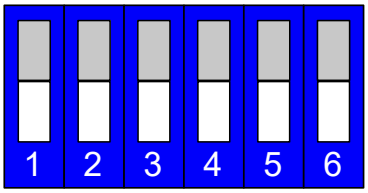
- The length of the connection cables between the local commands (N.O. Push button, 0-10 V, 1-10 V, Potentiometer or other) and the product must be less than 10m; the cables must be dimensioned correctly and they should be isolated from every wiring or parts at voltage not SELV. Use double insulated shielded and twisted cables.
- The length and type of the connection cables at the BUS (DMX512, Modbus, DALI or other) use cables as per specification of the respective protocols and regulations and they should be isolated from every wiring or parts at voltage not SELV. Use double insulated shielded and twisted cables.
- All the product and the control signal connect at the bus (DMX512, Modbus, DALI or other) and at the local command (N.O. Push Button, 0-10V, 1-10V, Potentiometer or other) must be SELV (the devices connected must be SELV or supply a SELV signal)

Outputs:

- The length of the connection cables between the product and the external power relays must be less than 10m; the cables must be dimensioned correctly and they should be isolated from every wiring or parts at voltage not SELV. Is preferable to use shielded and twisted cables.
- The length of the connection cables between the product and the external device to command with 0/1-10V signal must be less than 10m; the cables must be dimensioned correctly and they should be isolated from every wiring or parts at voltage not SELV. Is preferable to use shielded and twisted cables.
- The length of the connection for LED signalling must be less than 10m; the cables must be dimensioned correctly and they should be isolated from every wiring or parts at voltage not SELV. Is preferable to use shielded and twisted cables.
- The switching voltage to relay, must be dimensioned to power supply of Device “DIM CONVERTER” (not included power relay)

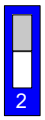
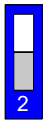
➢ SETUP & INSTALLATION

A 6-way dip-switch (under the cover) offers the possibility to set the type of the desired analog input command:

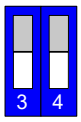
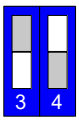
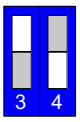
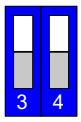
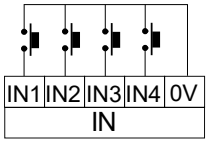
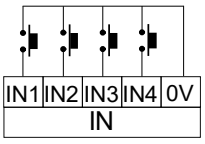
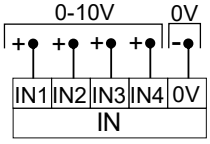
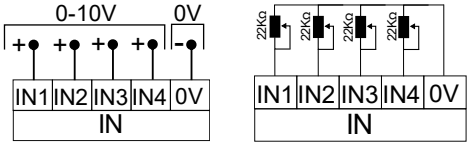
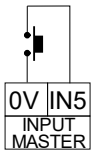
Function		
	 Note: Factory position = All OFF	▪ Switch 1 Reserved ▪ Switch 2: Inversion of Relay Driver output control ▪ Switches from 3 to 4: Input Type for local command 1,2,3 e 4 + Master ▪ Switch 5: Type of "Output range" ▪ Switch 6: Type of "Minimum of Dimming"

1) DIP 1: Reserved

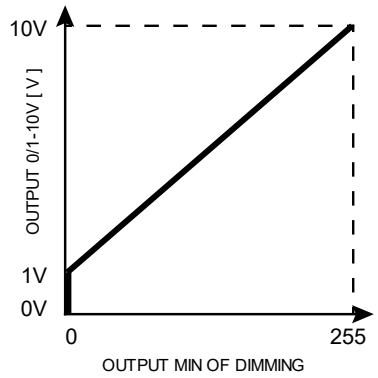
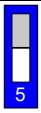
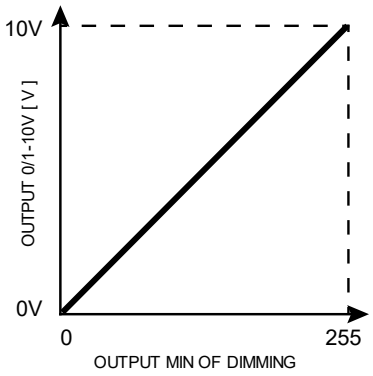
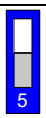
2) DIP 2: Inversion of Relay Driver output control

Inverted Driver Relay output: Relay Driver Off → Outputs 0/1-10V Off; Relay Driver On → Outputs 0/1-10V On;		Normal Driver Relay Relay Driver On → Outputs 0/1-10V Off; Relay Driver Off → Outputs 0/1-10V On;	

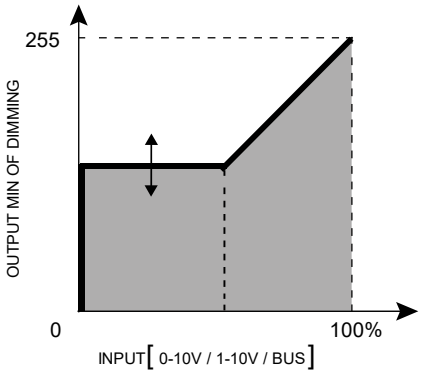
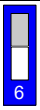
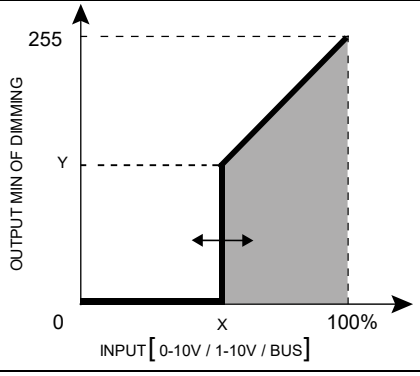
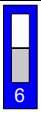
3) DIP from 3 to 4: Select Local Input Type for the channels 1,2,3 e 4 + Master Local Command

	N.O. Push Button NO memory 	N.O. Push Button Memory 	Analog Input 0-10V 	Analog Input 1-10V & potentiometer 
Local Input				
Master Local Command				

4) DIP 5: Select the Type of “Output range”

Management of the output range		Dip
Output range from 1V to 10V. Optimized to control 1-10V devices		
Output range from 0V to 10V. Optimized to control 0-10V devices		

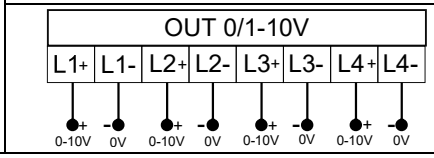
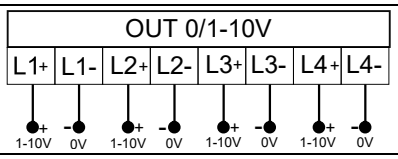
5) DIP 6: Select the Type of “Minimum of Dimming”

Management of the dimming curve		Dip
DIP 6 in “OFF”: The Relay Driver outputs are disconnected when the input is at “0”. From “0” to the minimum value, the output is “ON” and remains on when left idle (see point 7 on page 8).		
DIP 6 in “ON”: The Relay Driver outputs are deactivated at the minimum value set by the trimmer. The output turn OFF when the input is below the minimum value (see point 7 on page 8).		

6) DIM CONVERTER OUTPUT – Type of output connection.

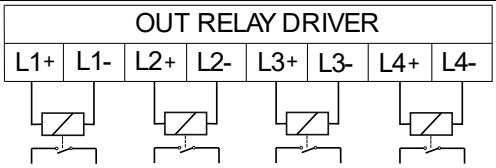
For each single analog output (0/1-10V) is associated a single Relay Driver output.

The analog output L1+,L1-	"OUT 0/1-10V"	is associated with Relay Driver output L1+,L1-	"OUT DRIVER RELE' "
The analog output L2+,L2-	"OUT 0/1-10V"	is associated with Relay Driver output L2+,L2-	"OUT DRIVER RELE' "
The analog output L3+,L3-	"OUT 0/1-10V"	is associated with Relay Driver output L3+,L3-	"OUT DRIVER RELE' "
The analog output L4+,L4-	"OUT 0/1-10V"	is associated with Relay Driver output L4+,L4-	"OUT DRIVER RELE' "

	0-10V	1-10V
ANALOG OUTPUT		

The 4 analog outputs are Sink / Source. It is possible to control device with command input both 0-10V that 1-10V. It is possible to control either device with 0-10V input command, and devices with 1-10V in command.

Example: The four analog output command the power supply with DIM FUNCTION, Led Driver with 0/1-10V command or dimmable devices 0/1-10V, as LED driver Dalcnet.

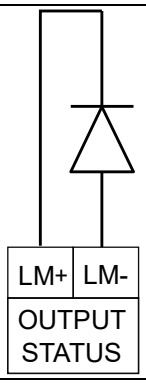
	Relay Driver
RELAY DRIVER OUTPUT	

The 4 Relay Driver outputs command the external power relay.

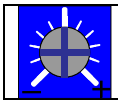
Example: By connecting the external power relay at the Relay Driver output of the DIM CONVERTER. It is possible to control the switch on/off of the power line of any connected power supplies.

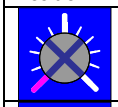
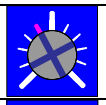
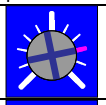
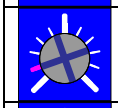
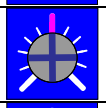
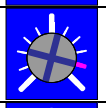
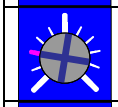
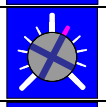
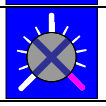
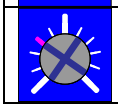
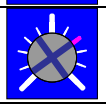
7) CHANNEL STATUS LED – Indicates whether a load is ON or OFF

The "OUTPUT STATUS" is an output channel where to connect a LED that indicates whether a load is ON or OFF.

	Channel Status
N°1 Channel status LEDs indicate whether a load is ON or OFF	

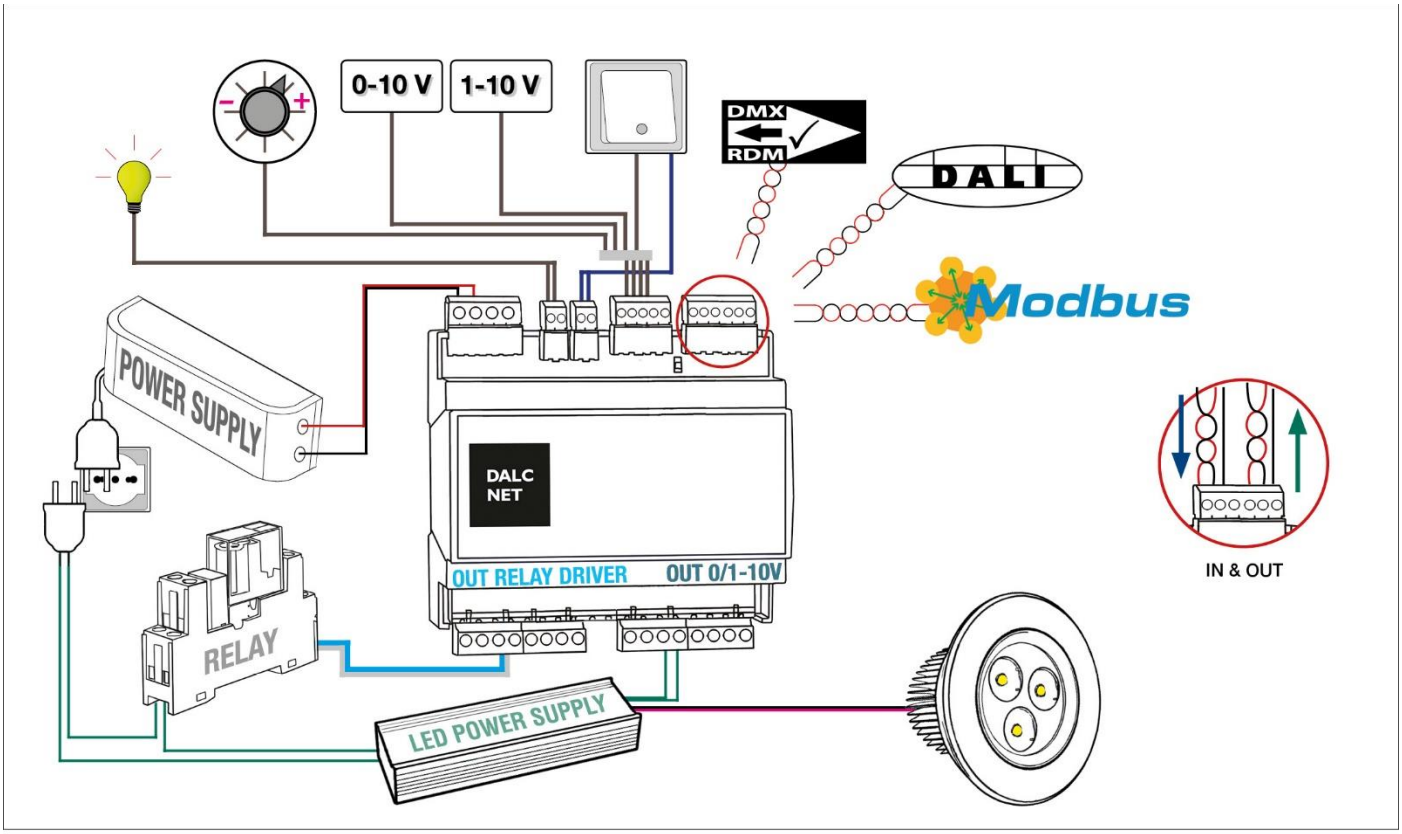
8) Setting the minimum value of the 0/1-10V analog output.

	The trimmer allows to regulate the minimum dimming value of the 4 analog outputs 0/1-10V.

Trimmer Position	Minimum dimming value of the 0/1-10V output	Trimmer Position	Minimum dimming value of the 0/1-10V output	Trimmer position	Minimum dimming value of the 0/1-10V output
	Minimum dimming value = 1V		Minimum dimming value = 20%		Minimum dimming value = 40%
	Minimum dimming value = 5%		Minimum dimming value = 25%		Minimum dimming value = 45%
	Minimum dimming value = 10%		Minimum dimming value = 30%		Minimum dimming value = 50%
	Minimum dimming value = 15%		Minimum dimming value = 35%		

The dimming minimum value is expressed as percentage of the absolute maximum value of the command signal input to the Dim Converter.

Example of application



Thanks to DIM CONVERTER is possible to command the power supplies with DIM Function (with 0/1-10V command) to dim the load connected to it.
The command to manage the outputs of DIM CONVERTER could be analog (Push buttons N.O., 0-10V, 1-10V or Potentiometer) or digital (DMX512-A/RDM, DALI, MODBUS).

Moreover, thanks to the low voltage Relay Driver outputs, it is possible to connect the power Relay. The Power Relay allow to control the power lines (230Vac) for switching on/off the power supplies controlled by the associated analog outputs.

The DIM CONVERTER ha has got a MASTER COMMAND input to turn on/off or dimming all output and has got one output channel status LEDs that indicates whether a load is ON or OFF.

This device allows the MASTER-SLAVE function.

Note: The Power Relays are not supplied with DIM CONVERTER. The switching voltage to relay, must be dimensioned to the power supply of Device “DIM CONVERTER”.

➢ LOCAL INPUT

- Command: Push Button N.O. without memory / Push Buton N.O. with memory

Input	Function	0/1-10V output		Relay Driver Output	
		Output variation 0/1-10V		Output Disable	Output Enable
IN1	Variation OUT 1	Click	: On / Off	Click OFF	Click ON
IN2	Variation OUT 2	Double Click	: Maximum Value	Click OFF	Click ON
IN3	Variation OUT 3	Long pressure (>1s) from OFF	: Turn ON at 10%[7]	Click OFF	Click ON
IN4	Variation OUT 4	Long pressure (>1s) from ON	: Variation Analog output 0/1-10V	Click OFF	Click ON

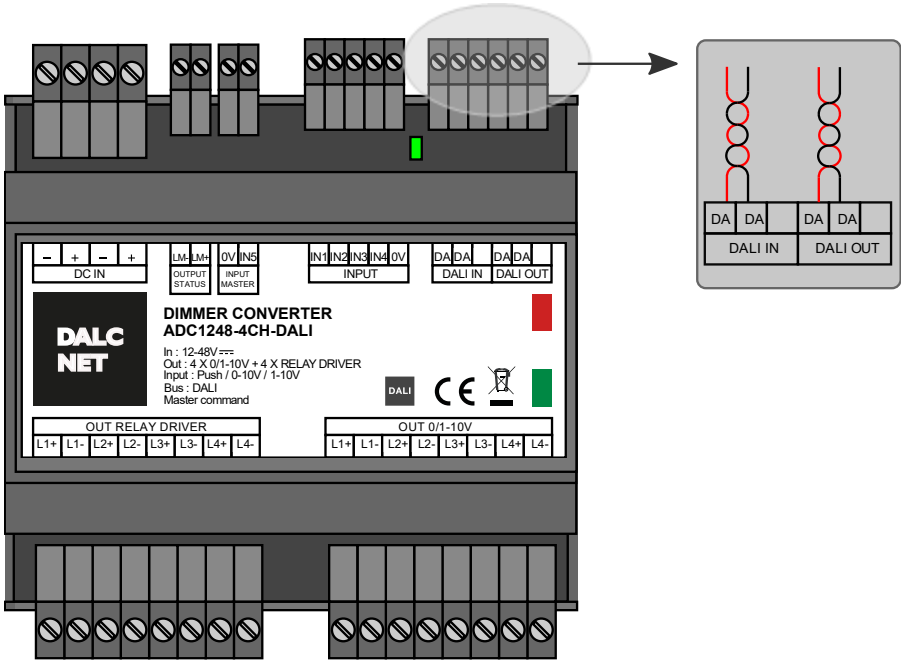
- Command: 0-10V / 1-10V & Potentiometer 22kOhm

Input	Function	0/1-10V output			Relay Driver Output	
		Output variation 0/1-10V			Output Disable	Output Enable
IN1	Variation OUT 1	0-1V=0%	Value 1-10V = Output variation 0-100%	10V=100%	Value 0 – 1V	Value 1 – 10V
IN2	Variation OUT 2	0-1V=0%	Value 1-10V = Output variation 0-100%	10V=100%	Value 0 – 1V	Value 1 – 10V
IN3	Variation OUT 3	0-1V=0%	Value 1-10V = Output variation 0-100%	10V=100%	Value 0 – 1V	Value 1 – 10V
IN4	Variation OUT 4	0-1V=0%	Value 1-10V = Output variation 0-100%	10V=100%	Value 0 – 1V	Value 1 – 10V

[7] The minimum value of power on of the output 0/1-10V depend of the minimum of dimming value set (see page 8).

➢ DALI BUS SETUP

*In **DALI BUS** all the output are controlled by an external DALI controller*



FEATURES

- Bus DALI

DALI BUS REFERENCE STANDARDS

IEC/EN 62386-101	Digital addressable lighting interface – Part 101: General requirements – System
IEC/EN 62386-102	Digital addressable lighting interface – Part 102: General requirements – Control gear
IEC/EN 62386-207	Digital addressable lighting interface – Part 207: Particular requirements for control gear – LED modules (device type 6)

ONBOARD BUS LED:

In the case of no bus power detected, or bus error, the led blinks fast (2 pulsed per second).
In the case of bus power but no data, led blinks slow (1 pulse per second).
In the case of data link active, the led stands on.

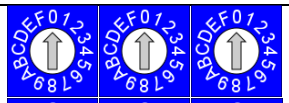
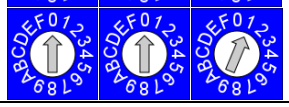
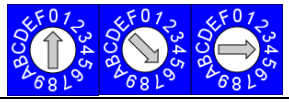
RELATION WITH LOCAL COMMANDS:

At power-up, in case of absence of connection to the BUS, local control is active.
When the BUS is detected, the control passes to the BUS. It remains to the BUS until there is signal.
In the absence of signal:

- If the local command is N.O. PUSH BUTTON, the control passes to local command in the event of an N.O. push button pressure.
- If the local command us 0-10V o 1-10V the control passes immediately to the local command.

ADDRESSING:

By selectors	✓
Simplified method (One ballast connected at a time)	✓
Addressing by BUS (Random Address Allocation)	✓

DALI	000 (DEFAULT)				Address defined by DALI
	DA 001		A 064		First channel address, from 0 to 63

ADDRESS MAP – DALI

Addr	Function	0/1-10V[8] output			Relay Driver Output[8]	
		Output variation 0/1-10V			Output Disable	Output Enable
+0	Variation OUT 1	0V Value 0	1V Value 1 .. 254	10V	Value 0	Value 1 .. 254
+1	Variation OUT 2	0V Value 0	1V Value 1 .. 254	10V	Value 0	Value 1 .. 254
+2	Variation OUT 3	0V Value 0	1V Value 1 .. 254	10V	Value 0	Value 1 .. 254
+3	Variation OUT 4	0V Value 0	1V Value 1 .. 254	10V	Value 0	Value 1 .. 254

[8] The minimum value of power on of the output 0/1-10V depend of the minimum of dimming value set (see page 8).

DALI COMMANDS

STANDARD COMMANDS	
DIRECT ARC POWER	✓
OFF	✓
UP	✓
DOWN	✓
STEP UP	✓
STEP DOWN	✓
RECALL MAX LEVEL	✓
RECALL MIN LEVEL	✓
STEP DOWN AND OFF	✓
ON AND STEP UP	✓
GOTO SCENE (0 to 15)	✓
RESET	✓
STORE ACTUAL LEVEL IN THE DTR	✓
STORE THE DTR AS MAX LEVEL	✓
STORE THE DTR AS MIN LEVEL	✓
STORE THE DTR AS SYSTEM FAILURE LEVEL	✓
STORE THE DTR AS POWER ON LEVEL	✓
STORE THE DTR AS FADE TIME	✓
STORE THE DTR AS FADE RATE	✓
STORE THE DTR AS SCENE (0 to 15)	✓
REMOVE FROM SCENE (0 to 15)	✓
ADD TO GROUP (0 to 15)	✓
REMOVE FROM GROUP (0 to 15)	✓
STORE DTR AS SHORT ADRESS	✓
ENABLE WRITE MEMORY	×
QUERY STATUS	[9]
QUERY BALLAST	✓
QUERY LAMP FAILURE	[9]
QUERY LAMP POWER ON	✓
QUERY LIMIT ERROR	✓
QUERY RESET STATE	✓
QUERY MISSING SHORT ADDRESS	✓
QUERY VERSION NUMBER	✓
QUERY CONTENT DTR	✓
QUERY DEVICE TYPE	[10]
QUERY PHYSICAL MINIMUM LEVEL	✓
QUERY POWER FAILURE	✓
QUERY CONTENT DTR1	✓
QUERY CONTENT DTR2	✓
QUERY ACTUAL LEVEL	✓
QUERY MAX LEVEL	✓
QUERY MIN LEVEL	✓
QUERY SYSTEM FAILURE LEVEL	✓
QUERY FADE TIME / FADE RATE	✓
QUERY SCENE LEVEL (0 to 15)	✓
QUERY GROUPS 0-7	✓
QUERY GROUPS 8-15	✓
QUERY ADDRESS H	✓
QUERY ADDRESS M	✓
QUERY ADDRESS L	×
READ MEMORY LOCATION	×

SPECIAL COMMANDS	
TERMINATE	✓
DATA TRANSFERT REGISTER	✓
INITIALIZE	✓
RANDOMIZE	✓
COMPARE	✓
WITHDRAW	✓
SEARCHADOR H	✓
SEARCHADOR M	✓
SEARCHADOR L	✓
PROGRAM SHORT ADDRESS	✓
VERIFY SHORT ADDRESS	✓
QUERY SHORT ADDRESS	✓
PHYSICAL SELECTION	×
ENABLE DEVICE TYPE	×
DATA TRANSFER REGISTER 1	✓
DATA TRANSFER REGISTER 2	✓
WRITE MEMORY LOCATION	×

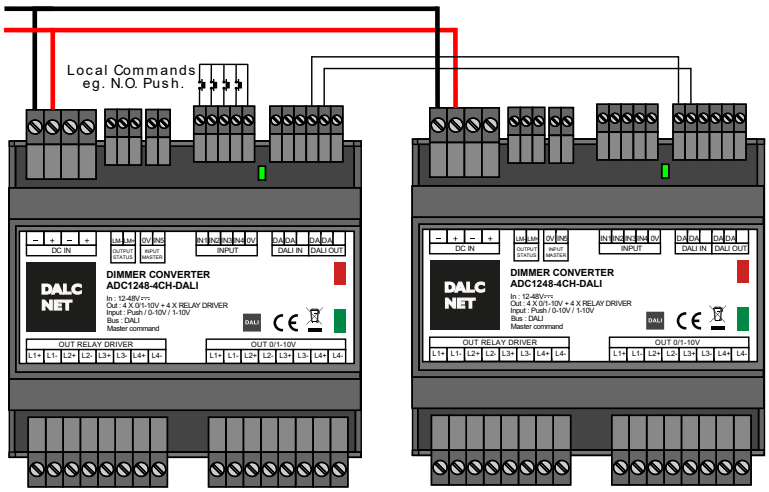
[9] "Lamp failure" returns always "NO"

[10] "Quesry device type" returns DT6 but "Enable device Type" is not enabled.

➢ DALI MASTER / SLAVE

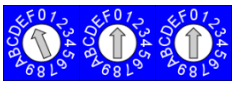
Example to Master/Slave connection (SINGLE MASTER)

More DIM CONVERTER devices can be connected following a master/slave configuration. Master and Slave must be the same DIP-SWITCH configuration. For correct operation, the DALI BUS power supply is required. To select the desired local command, DIP-SWITCH need to be set as explained in ***Setup &Installation*** on page 5.



Master:

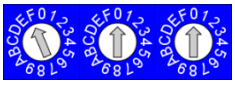
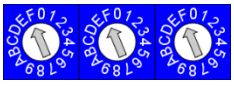
Default Master:

F00		MASTER

ONBOARD BUS LED:

In the case of no bus power detected the led remains off.
In the case of data link active, the led stands on.

Master with FADE UP / FADE DOWN:

FROM F00		TO FFF		MASTER with FADE: Selector “x10” = UP fade time Selector “x1” = DOWN fade time 0 = no Fade, F = 60 seconds (see table)

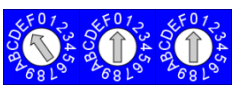
Fade times:

0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
NO FADE	0,5s	1s	2s	3s	4s	5s	6s	7s	8s	9s	10s	15s	20s	30s	60s

Examples:
Turn on/off without fade (no Fade UP / DOWN): F00
Turn on without fade (no Fade UP) and turn off fade of 5 seconds (Fade DOWN): F06
Turn on fade of 1 seconds (Fade UP) and turn off fade of 10 seconds (Fade DOWN): F28
Note: The “slave” device follows master fade ramps. Master Device send Dali Command continuously to Slave Devices.

Slave:

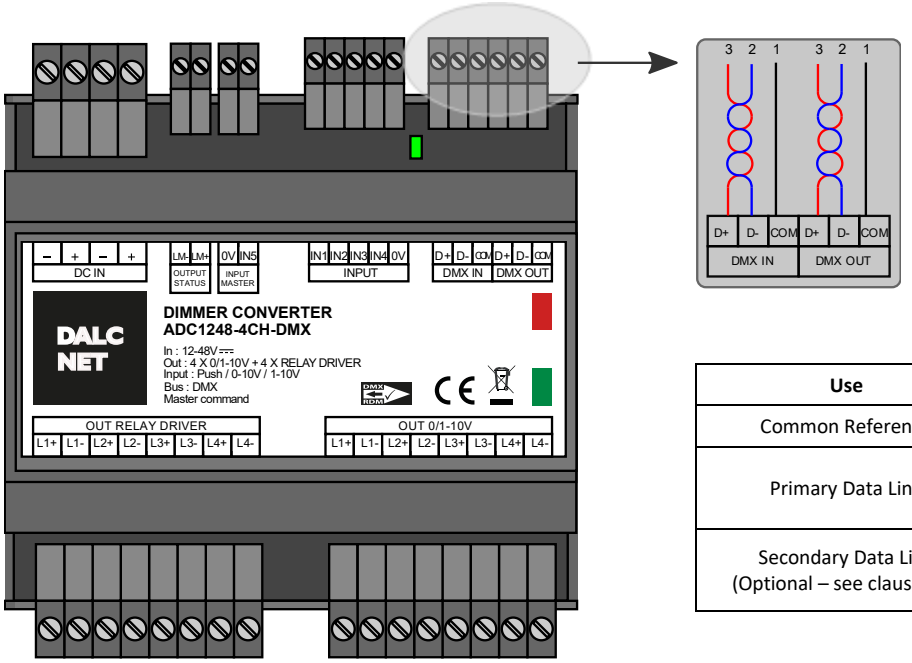
Default Slave:

E00		SLAVE

Note: The slaves follow master fade ramps.

➢ DMX512-A+RDM BUS SETUP

*With the **DMX+RDM BUS SETUP** in the "slave" condition the outputs are managed by an external DMX controller.*
In the "master" condition, the DMX+RDM allows the communications between devices.



Use	3-Pin XLR Pin #	DMX512 Function
Common Reference	1	Data Link Common
Primary Data Link	2	Data 1-
	3	Data 1+
Secondary Data Link (Optional – see clause 4.8)	4	Data 2-
	5	Data 2+

FEATURES

➢ Bus DMX512-A+RDM
➢ Master/Slave

DMX512-A+RDM BUS REFERENCE STANDARDS

ANSI E1.11	Entertainment Technology – USITT DMX512-A Asynchronous Serial Digital Data Transmission Standard for Controlling Lighting
ANSI E1.20	Entertainment Technology-RDM-Remote Device Management over USITT DMC512 Networks

TECHNICAL SPECIFICATION

Standard DMX512-A/RDM

ONBOARD BUS LED:

In the case of bus error, the led blinks fast (2 pulsed per second).
In the case of bus detected, led blinks slow (1 pulse per second).
In the case of data link active, the led stands on.

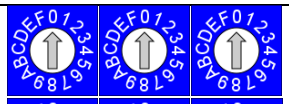
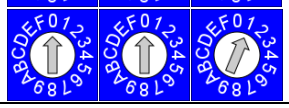
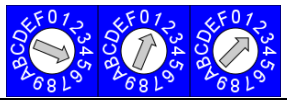
RELATION WITH LOCAL COMMANDS:

At power-up, in case of absence of connection to the BUS, local control is active.
When the BUS is detected, the control passes to the BUS. It remains to the BUS until there is signal.
In the absence of signal:

- If the local command is N.O. PUSH BUTTON, the control passes to local command in the event of an N.O. push button pressure.
- If the local command is 0-10V o 1-10V the control passes immediately to the local command.

ADDRESSING:

RDM	✓
By selectors	✓

DMX	000 (DEFAULT)				Addressing defined by RDM
	DA 001		A 512		First channel address, from 1 to 512

CHANNELS MAP – DMX512-A

Ch.	Function	0/1-10V output[11]			Relay Driver Output[11]	
		Output variation 0/1-10V			Output Disable	Output Enable
1	Variation OUT 1	0V Value 0	1V	10V Value 1 .. 255	Value 0	Value 1 .. 255
2	Variation OUT 2	0V Value 0	1V	10V Value 1 .. 255	Value 0	Value 1 .. 255
3	Variation OUT 3	0V Value 0	1V	10V Value 1 .. 255	Value 0	Value 1 .. 255
4	Variation OUT 4	0V Value 0	1V	10V Value 1 .. 255	Value 0	Value 1 .. 255

RDM COMMANDS

REQUIRED PARAMETERS	
DISC_UNIQUE_BRANCH	✓
DISC_UN_MUTE	✓
SUPPORTED_PARAMETERS	✓
PARAMETERS_DESCRIPTION	✓
DEVICE_INFO	✓
SOFTWARE_VERSION_LABEL	✓
DMX_START_ADDRESS	✓
IDENTIFY_DEVICE	✓

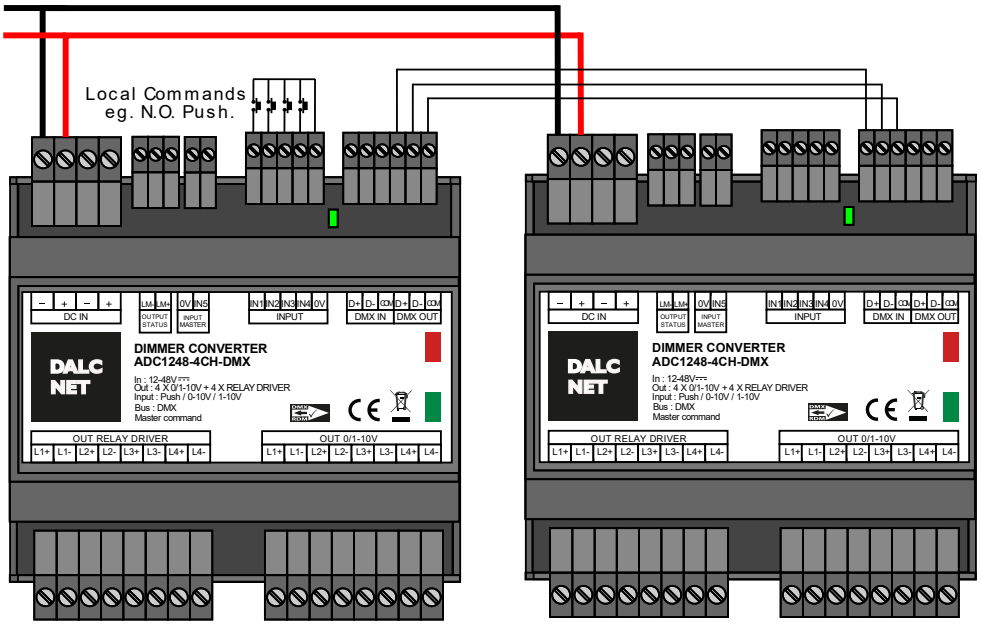
SUPPORTED PARAMETERS	
PRODUCT_DETAIL_ID_LIST	✓
DEVICE_MODEL_DESCRIPTION	✓
MANUFACTURER_LABEL	✓
DEVIDE_LABEL	✓
BOOT_SOFTWARE_VERSION_ID	✓
BOOT_SOFTWARE_VERSION_LABEL	✓
DMX_PERSONALITY	✓
DMX_PERSONALITY_DESCRIPTION	✓
SLOT_INFO	✓
SLOT_DESCRIPTION	✓
DEFAULT_SLOT_VALUE	✓

[11] The minimum value of power on of the output 0/1-10V depend of the minimum of dimming value set (see page 8).

➢ DMX MASTER / SLAVE

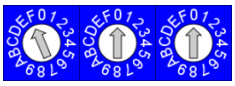
Example to Master/Slave connection

More DIM CONVERTER devices can be connected following a master/slave configuration. Master and Slave must be the same DIP-SWITCH configuration. To select the desired local command, DIP-SWITCH need to be set as explained in ***Setup &Installation*** on page 5.

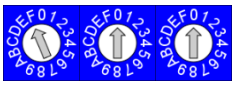
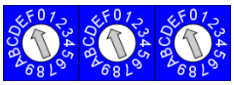


Master:

Default Master:

F00		MASTER

Master with FADE UP / FADE DOWN:

FROM F00		TO FFF		MASTER with FADE: Selector “x10” = UP fade time Selector “x1” = DOWN fade time 0 = no Fade, F = 60 seconds (see table)

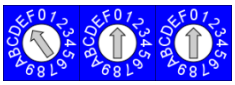
Fade times:

0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
NO FADE	0,5s	1s	2s	3s	4s	5s	6s	7s	8s	9s	10s	15s	20s	30s	60s

Examples:
Turn on/off without fade (no Fade UP / DOWN): F00
Turn on without fade (no Fade UP) and turn off fade of 5 seconds (Fade DOWN): F06
Turn on fade of 1 seconds (Fade UP) and turn off fade of 10 seconds (Fade DOWN): F28
Note: The “slave” device follows master fade ramps.

Slave:

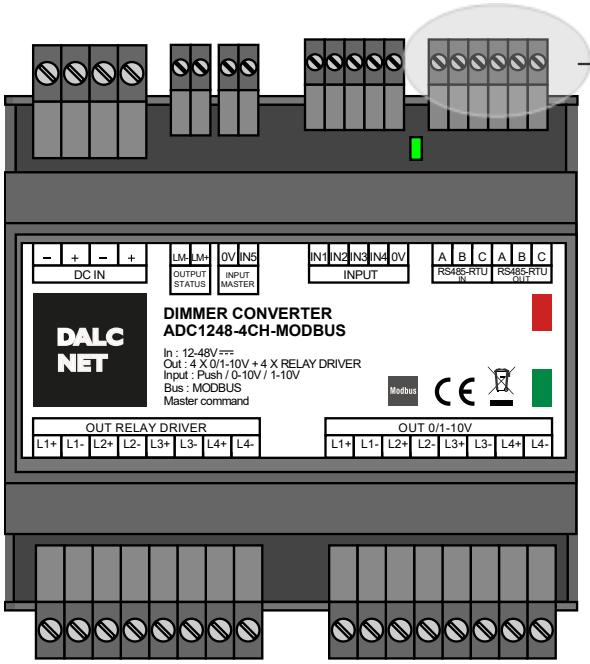
Default Slave:

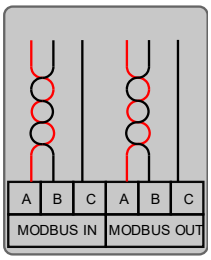
E00		SLAVE

Note: The slaves follow master fade ramps.

➢ MODBUS SETUP

*In **MODBUS** in the "slave" condition the output are managed by an external MODBUS RTU master controller (RS-458).*





FEATURES

➢ BUS MODBUS RTU SLAVE on RS485

MODBUS REFRENCE STANDARDS

•	MODBUS APPLICATION PROTOCOL SPECIFICATION V1.1b

Notes:
The device does not polarize and there isn't implemented the ability to polarize the BUS.
In this case the polarization of the BUS must be implemented externally.
The polarization of the BUS can be carried out by the Master Modbus or on the terminals of the device. If the polarization of the BUS is carried out by Master or on the terminal of the device, no device present on the BUS must implement any polarization.

For more information see the MODBUS specification **"MODBUS over serial line specification and implementation guide V1.02".**

ONBOARD BUS LED:

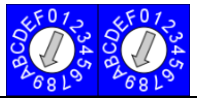
In the case of bus error, the led blinks fast (2 pulsed per second).
In the case of no bus detected, led blinks slow (1 pulse per second).
In the case of data link active, the led stands on.

RELATION WITH LOCAL COMMANDS:

At power-up, in case of absence of connection to the BUS, local control is active.
When the BUS is detected, the control passes to the BUS. It remains to the BUS until there is signal.
In the absence of signal:

- If the local command is N.O. PUSH BUTTON, the control passes to local command in the event of an N.O. push button pressure.
- If the local command is 0-10V o 1-10V the control passes immediately to the local command.

ADDRESSING BY SELECTORS:

Selectors x10, x1 (middle and right)					
MODBUS	000 (DEFAULT)				Default Modbus ID (1)
	FROM 001		TO 99		Modbus ID

Selector x100 (left)								
Modbus								
	0 115200 baud 8N1	1 115200 baud 8E1	2 38400 baud 8N1	3 38400 baud 8E1	4 19200 baud 8N1	5 19200 baud 8E1	6 9600 baud 8N1	7 9600 baud 8E1

VARIABLES MAP – MODBUS

Var	Function	0/1-10V Output[12]			Relay Driver Output[12]	
		Output variation 0/1-10V			Output Disable	Output Enable
1	Variation OUT 1	0V Value 0	1V Value 1 .. 254	10V	Value 0	Value 1 .. 255
2	Variation OUT 2	0V Value 0	1V Value 1 .. 254	10V	Value 0	Value 1 .. 255
3	Variation OUT 3	0V Value 0	1V Value 1 .. 254	10V	Value 0	Value 1 .. 255
4	Variation OUT 4	0V Value 0	1V Value 1 .. 254	10V	Value 0	Value 1 .. 255

SUPPORTED FUNCTIONS FOR READING AND WIRING – MODBUS RTU

Function code		
0x01	Read Coils	✗
0x02	Read Discrete Inputs	✗
0x03	Read Holding Registers	✓
0x04	Read Input Register	✗
0x05	Write Single Coil	✗
0x06	Write Single Register	✓
0x07	Read Exception Status	✗
0x08	Diagnostic	✗
0x0B	Get Co Event Counter	✗
0x0C	Get Com Event Log	✗
0x0F	Write Multiple Coils	✗
0x10	Write Multiple Registers	✓
0x11	Report Server ID	✗
0x14	Read File Record	✗
0x15	Write File Record	✗
0x16	Mask Write Register	✗
0x17	Read/Write Multiple Registers	✗
0x18	Read FIFO queue	✗
0x2B	Read Device Identification	✗

[12] The minimum value of power on of the output 0/1-10V depend of the minimum of dimming value set (see page 8).