SINGLE MODE OPTIC FIBER TRANSCEIVER BOX

Ref. AQ5482A

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1 - GENERALITY

The single mode optic fiber box ref. AQ5482A is designed to transform an electrical pulse into an optical pulse, and an optical pulse into an electrical pulse.
This box can operate in receiving or emetting mode without specific setting.

> ***CAUTION:***
> **Take care not to expose your eyes directely to the laser beam.**

2 – ELECTRICAL CHARACTERISTICS

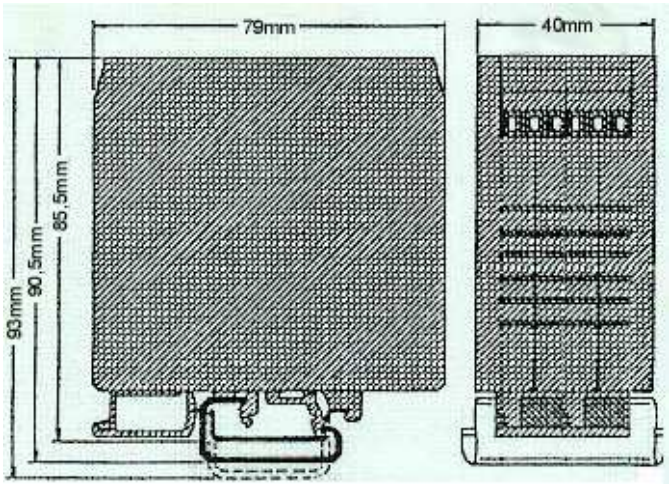
Supply range :	24 – 48 VDC	
Mean power consumption :	120 mA on 48 VCC +/- 10 %	
Operating Temperature range :	0 to 50 °C	
Input copper synchronization :	copper (wiring bond)	
Input Signal :	24 – 48VDC	
Output copper synchronization :	copper (wiring bond)	
Output Signal :	24 – 48VDC (depending on supplying tension)	
Optical Input/Output :	laser photodiode	
Connection :	copper :	screw connecting terminal solid : 0,2 to 4 mm² flex : 0,2 to 2,5 m²
	optical :	optic fiber in a ST receptacle
Optic fiber :	silica 9/125 µm single mode.	
Maximum distance use :	20 000 meters.	

3 – MECHANICAL CHARACTERISTICS

Polyamide box ensures good mechanical and electrical insulating.

A click-mechanism allows an easy mounting of the box on a rail-mounted profile (symmetrical or asymmetrical).

Dimensions :



Symmetrical rail

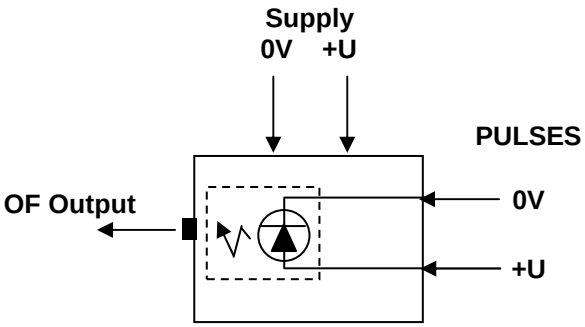
Asymmetrical rail

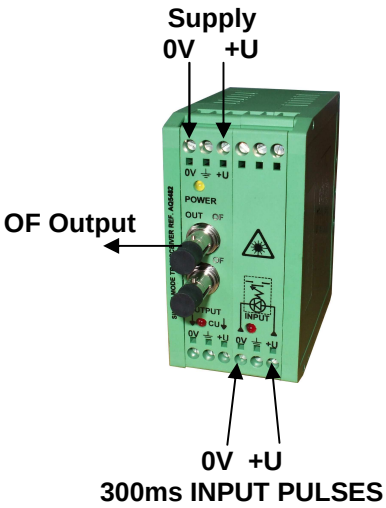
4 - FONCTIONNING

1) Optical emetting mode :

An electrical pulse is provided by a 5s/1mn pulse card (ref. AK5214) of the master clock M90 EXP 320. This optical pulse is received on points 10(-) and 12(+).
Note : the loop must be polarized before.
A voltage divider will then induce a voltage downfall in way to drive the 3.3V supplying the optic fiber emitting box.
The red led lighting allows to check pulse detection and correct operating of the power stage.

Process diagram :

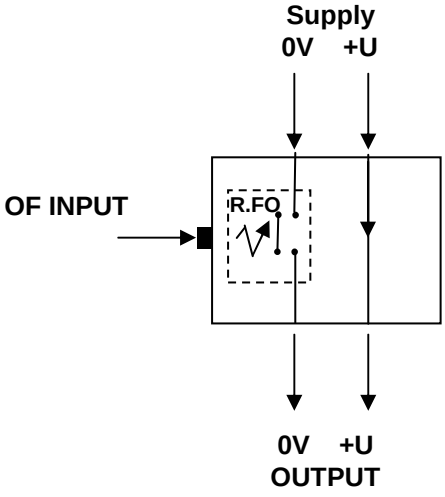


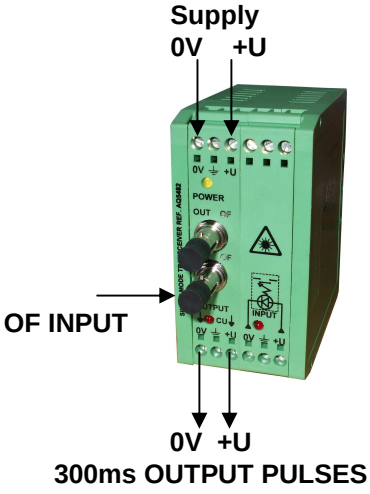


2) Optical receiving mode :

In receiving mode, the optic fiber box ref. AQ5482A transforms an optical pulse into an electrical pulse, when supplyied in the required range.
The optical pulse is sent by another box ref. AQ5482A used in emetting mode.
The optic fiber (silica 9/125 µm single mode) length can be lower or equal to 20.000 metres.
When the optical pulse is transmitted to the receiving box and transformed into an electrical pulse, a bipolar current-sink Darlington output driver provides a 100 mA current.
The red led lighting allows to check pulse detection and correct operating of the power stage.
In receiving mode the box operates as an opto-isolator.

Process diagram :



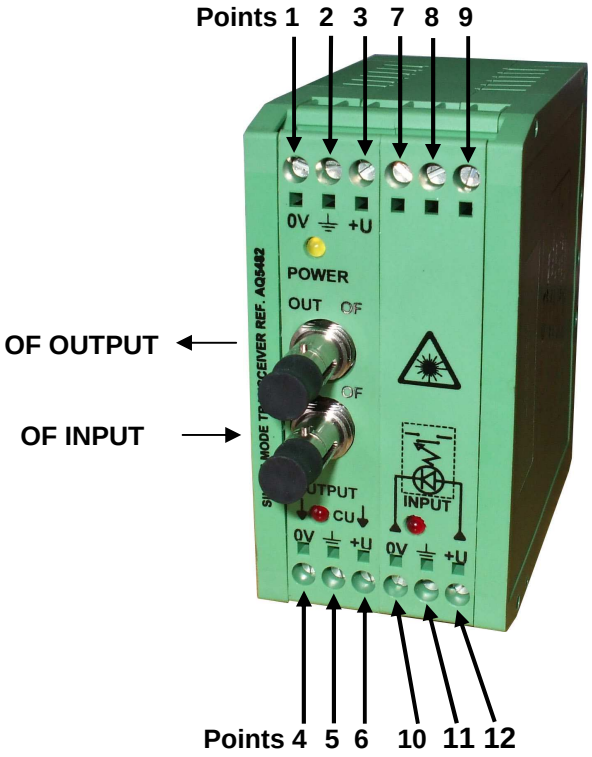


5 - CONFIGURATION

No specific configuration is required.

6 - CONNECTION

The connection is performed with screw-connecting terminal or optic fiber in a ST connector.



Connecting points:

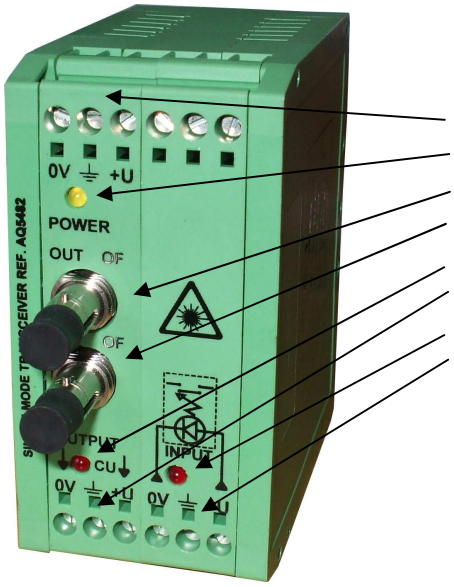
Point 1	**==> 0 V supply**
Points 2, 5, 11	**==> Ground.**
Point 3	**==> 24-48VDC supply.**
Point 4	**==> 0V output pulse**
Point 6	**==> +U output pulse.**
Point 10	**==> 0V input pulse**
Point 12	**==> +U input pulse**
Points 7, 8, 9	**==> Not connected.**

Cautions :

Some cautions are required when using optic fiber. It is recommended not to take over the cap of the optic fiber component, when not connected, to prevent dust from disturbing the optical signal.

7 - EXPLOITATION

Front face :



3 screw-terminal for supply.
1 yellow led “power”
1 optic fiber emetting receptacle.
1 optic fiber receiving receptacle.
1 red led for output signal
3 screw-terminal connection for copper pulse output
1 red led for input signal.
3 screw-terminal connection for copper pulse input

In normal process, the optic fiber box receives 300 ms pulses every 5 seconds or every minute. The electronic is designed to operate with this pulse and to dissipate the corresponding power.

8 – START UP

When all connections achieved, check the red led lighting.

The pulse lighting is every 5 seconds or every minute, depending on pulse generator. If the red led does not light up :

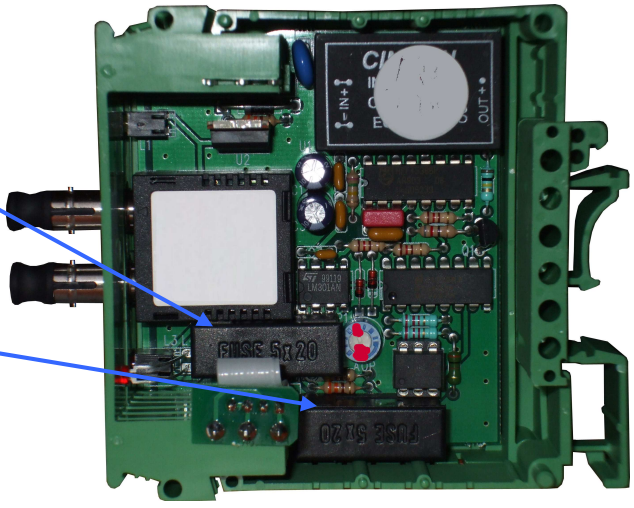
- Check the supply (yellow led lighting)
- Check the optic fiber connection
- Check the pulse generator functionning (input copper)

9 – MAINTENANCE

In case of excessive current draw, 2 100mA fuses protect the input and the output electronic copper. The fuse remplacement requires to open the box. To keep the protection degree, change the fuse by a similar one (5*20mm 100 mA / 250 V fuse).

Fuse for input copper protection

Fuse for output copper protection



E V O L U T I O N S H E E T

INDEX	DATE	MODIFICATION	REALISED BY :	APPROUVED BY :
D				
C				
B				
A	05/16	PCB Upgrade	M. MALARD	J. DENZLER
	07/07	Creation	M. MALARD	J. DENZLER