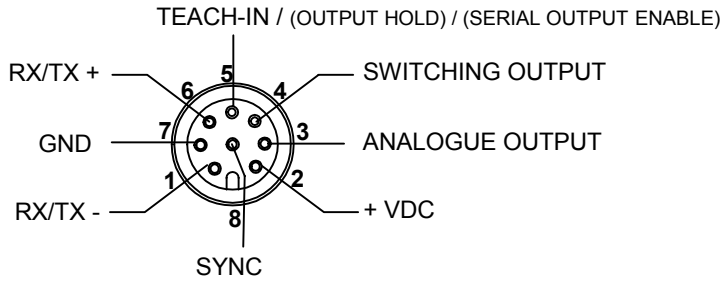
DS2 QUICK OPERATION

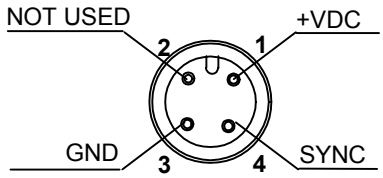
MECHANICAL MOUNTING

The emitter and receiver units have to be mounted with the relevant sensitive surfaces facing each other. The connectors must be positioned on the same side and at a distance between 0.3 and 5 m.
For versions with optic interaxis a 6.75 mm, 0.3-10 m for versions with optic interaxis a 25 mm.
To mount the device, insert the threaded pins supplied in the slots present on the two units.
Depending on the particular application and/or type of support, the operator can use the fixing pins or the rigid fixing brackets supplied to mount the two units. Moreover, a minimum distance of 0.5 m from reflecting objects outside the detection area is recommended.

ELECTRICAL CONNECTIONS

The electrical connection between the emitting and receiving units is made through a male M12 connector located in the lower part of the light grid.





DIGITAL OUTPUT FUNCTIONING

The detection mode is activated whenever at least one beam is interrupted inside the detection area. The activation causes the digital output switching (signalled by the powering of the yellow LED).

The DS2 presents many different functions, listed below, that condition the switching output:

- **Switching Output Mode**: indicates if electrical current passes through switching output; the output can be normally closed ***(N.C.)*** or normally open ***(N.O.)***.
- **Switching Output Delay:** delays the re-setting of the switching output after detection. The delay time can be selected.
- **Acquisition and detection (Teach-in):** allows a conditioned detection of the object inside the detection area: if the object corresponds (without resolution) to the object detected during the Teach-in phase, the output switches. On the contrary nothing happens. The following modes can be set:
  - **absolute teach-in detection**, the output switches only if the previously set object is re-detected in the same position.
  - **relative teach-in detection**, the output switches only if the previously set object (without resolution) is re-detected, independently from the position in the sensing area.

ANALOGUE OUTPUT FUNCTIONING

- The 0-10 V analogue output, supplies limited information if compared to the information that can be obtained from the serial output; some functions are significant only if obtained in a serial ambient.
- Two measurement modes are available that can be selected from dip–switches. In the **absolute measurement** mode the analogue output is proportional to the total number of interrupted beams, while in the **relative measurement** mode the analogue output is proportional to the last interrupted beams.

Moreover, the first reference beam to select, **by using only dip-switches**, can be the one closest beam (default reference) or the one furthest away from the connector, located at the opposite side of the unit where the analogue voltage is at the minimum level ***(positive ramp 0-10 V)*** or maximum ***(negative ramp 10-0V)*** in correspondence of the obscuring of the default reference beam.

RS485 SERIAL OUTPUT FUNCTIONING

Serial output data updating is usually made at the end of each scanning cycle. This conditions enormously the response time of the DS2 light grid, as it is depends on the serial baud-rate, data structure and information detail that has to be transmitted on the serial output for the application. Some serial configuration commands have been added to make the device flexible to different applications. The remote user interface completely controls these commands.

- **Baud-rate selection:** allows the change of the serial switching speed. The 485 standard guarantees excellent disturbance immunity and thus the increase of the transmission speed may compromise the system. The speed has to be evaluated according to the application, plant and cabling.
- **Transmission standard selection:** the ***ASCII*** or ***Binary*** data structure transmitted by the serial output can be selected; in applications where time is important, the binary structure is preferred. For details concerning data transmission please see "*Communication protocol*" section of the user manual.
- **Data partition selection:** allows a partial serial data transmission. In particular, the transmission of the **complete beam status array** or **partial beam status array** is distinguished: The two conditions exclude each other (one or the other). If the partial transmission is selected, one of the aforementioned measurement modes has to be chosen. Partial transmission is preferred for applications where time factors are important. Further partial transmission is ***short protocol*** which transmission is purely binary and extremely fast. Fuction is enable for single measure only. For data transmission details please see *"Communication protocol*" section of the user manual.
- **Data sending mode selection:** function allows the operator to choose when to send the data from the serial output. The sending can also be inhibited by a specific selection (via "software", using the specific command, via "hardware" programming the ***serial output enable*** input – pin 5 RX connector – using the user interface). The sending mode selection can be reached only via remote control. Four options can be selected: ***data sending at each machine cycle*** which is the default setting, ***data sending at each output status change***, ***data sending at analogue output value change***, ***user sending request***, using the interface command button. This last condition can be requested also by an external command previously programming the device (per details please see section 7 "*Communication protocol*").

LOCAL PROGRAMMING

The local programming and function selection is made using two dip-switches located inside the receiver unit lid. For information concerning the correspondence between the selector positions and the operation modes please consult the user manual.

REMOTE PROGRAMMING

The remote programming and function selection is made using an user interface on a remote host, which communicates with DS2 using the standard RS232 serial interface.
The interface can be found in the CD supplied with the device package.
The interface provides access to a series of auxiliary functions; for more information please consult the user manual.