

SMART READER M1

Reference Manual_____

ENG

Version__02.00.06 (November 2003)

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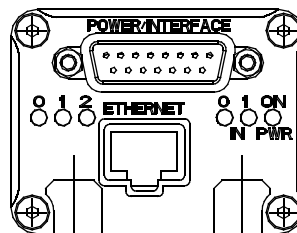
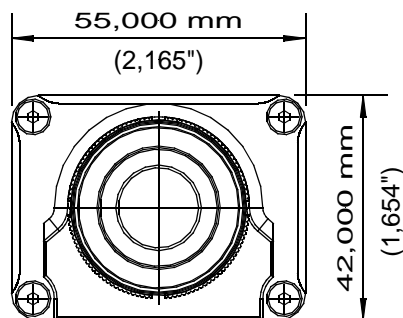
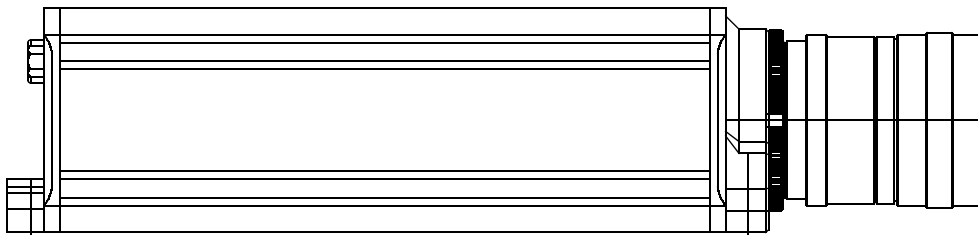
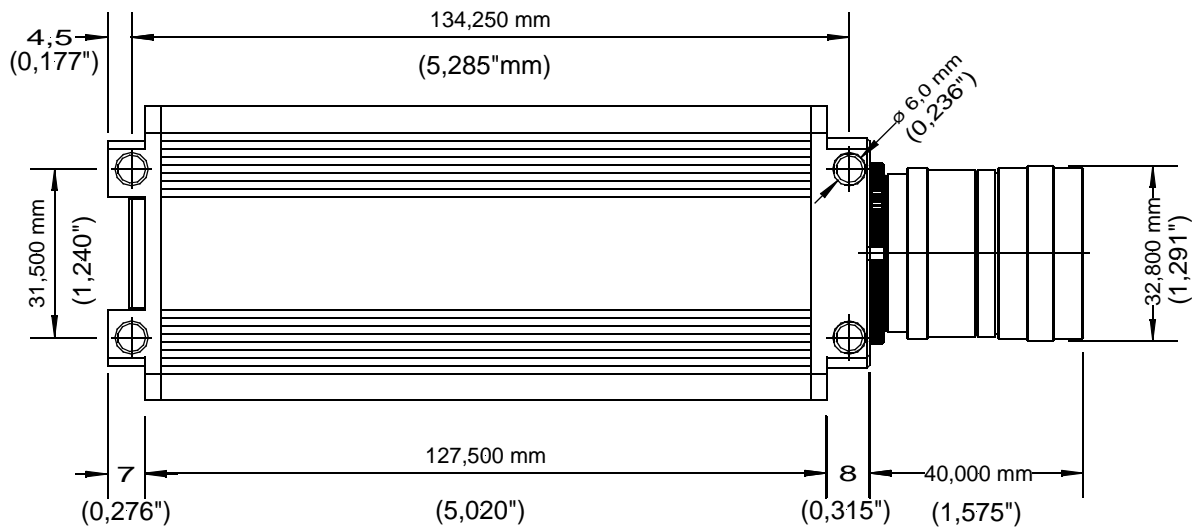
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Overview Smart Reader M1

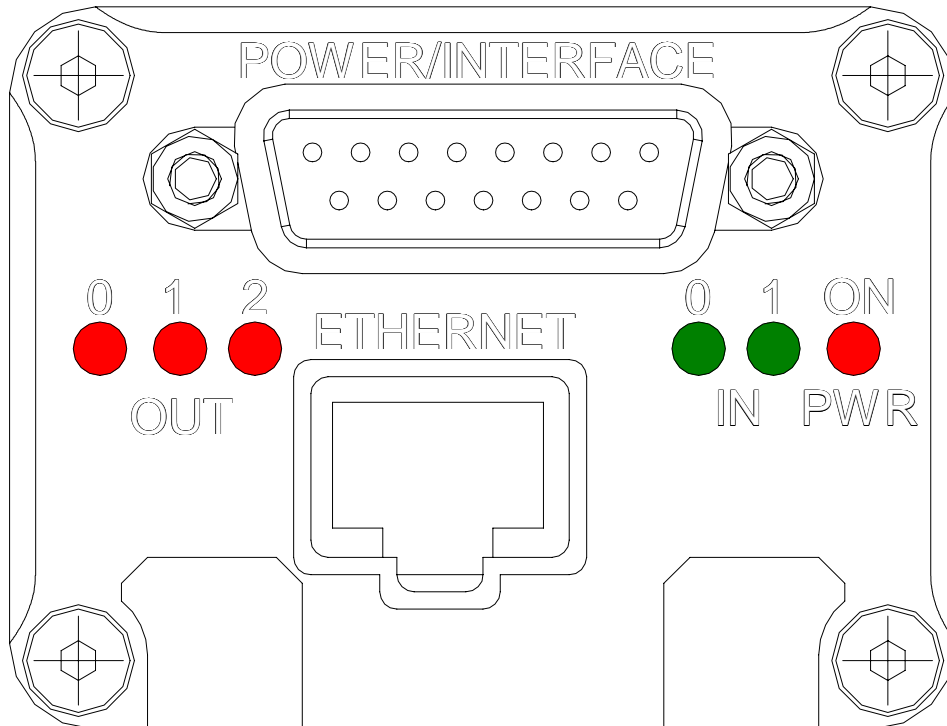


Smart Reader M1 Mechanical Dimensions



Note: use M6 type screws to fix the camera

Smart Reader M1 Silkscreen



Smart Reader M1 Electrical Characteristics

- Power supply: from 15 V to 35V - 5W max.
- Digital inputs: 2 PNP inputs -24 V 20 mA, opto-isolated
- Digital outputs: 3 PNP - outputs 24 V 500 mA, opto-isolated
- 232 serial port: 1 RS-232 serial line
- 485 serial port: 1 RS-485 serial line Half duplex
- Ethernet Network: Ethernet network line 10-MB/s 10 Base T
- Optical Filter: Filter pass-band 350÷750nm

Processor

- Microprocessor: StrongARM
- Flash: 4Mbyte FLASH memory
- Ram: FAST static memory:4Mbyte basic version,8Mbyte others.

Physical Characteristics

- Degree of protection: IP52
- Mechanical dimensions: 145 x 55 x 42 mm (LxHxW)
5.71 x 2.17 x 1.65 in. (LxHxW)
- Weight: 175 g (6.2 oz.)
- Conformity: Conforms to CE standard

Standard Supply

- Smart Reader central unit
- DB15 pin interface connector
- Connector protection cap
- User manual
- Graphic programming environment

Accessories

- Power supply unit 220Vac / 24 Vdc stabilised 48W
- Cable 8 pin x 0.25mm + shield
- Cable for Ethernet interface
- Lenses "C" - Mount
- Light Leds

Work Tensions

	<i>Description</i>	<i>Min</i>	<i>Typical</i>	<i>Max</i>	<i>Note</i>
V_{cc}	Unit power supply	+15V	+24V	+32V	Provide a stable supply, use at least a 50W power supply.
$V_{I/O}$	I/O power supply	+15V	+24V	+32V	Provide a stable supply

Work Conditions

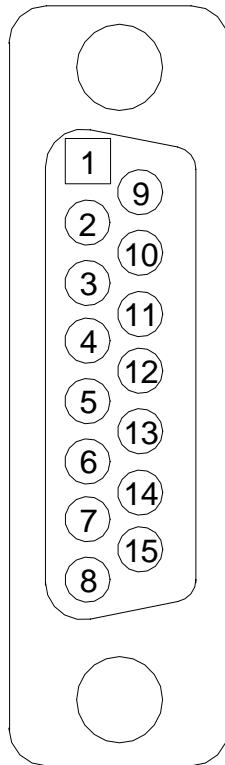
	<i>Description</i>	<i>Min</i>	<i>Max</i>	<i>Note</i>
T_{op}	Working Temperature	0°C	50°	
H	Working Humidity	35%	85%	WITHOUT CONDENSATION



NOTE: Smart Reader M1 power supply **must absolutely not be connected** with the same power supply as the I/O.

Smart Reader M1 Connection

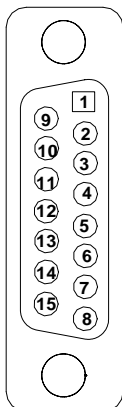
Power/Interface Pinout
15 Pole Female
Front View



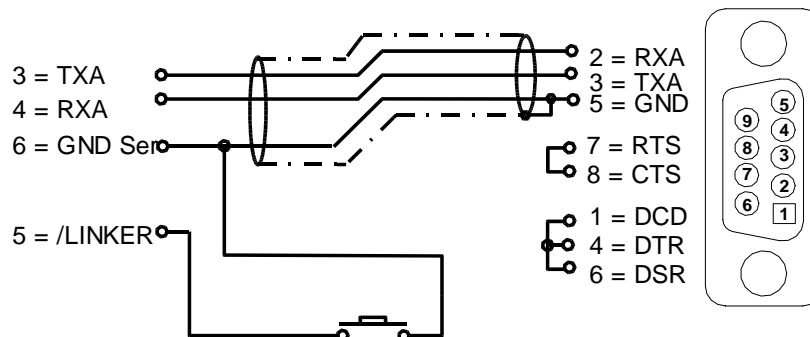
①	+V _{CC}	⑨	+V _{I/O}
②	GND	⑩	INPUT 0
③	TXA-RS232	⑪	INPUT 1
④	RXA-RS232	⑫	OUTPUT 0
⑤	LINKER	⑬	OUTPUT 1
⑥	GND Seriale	⑭	OUTPUT 2
⑦	RS-485 B	⑮	GND _{I/O}
⑧	RS-485A		

RS-232 Connection cable

Smart Reader M1
(15 Pole Male)

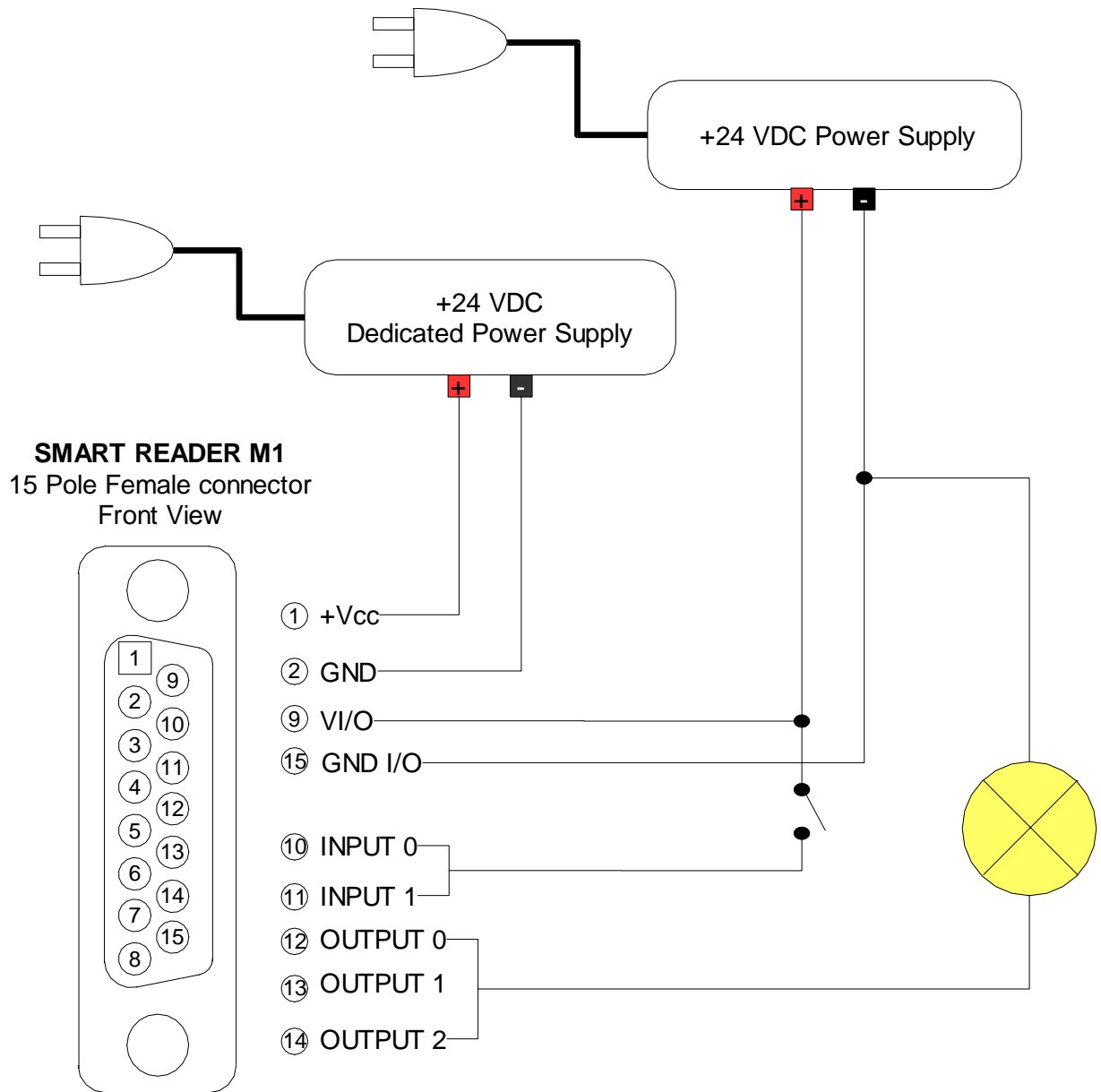


Personal Computer
(9 Pole Female)



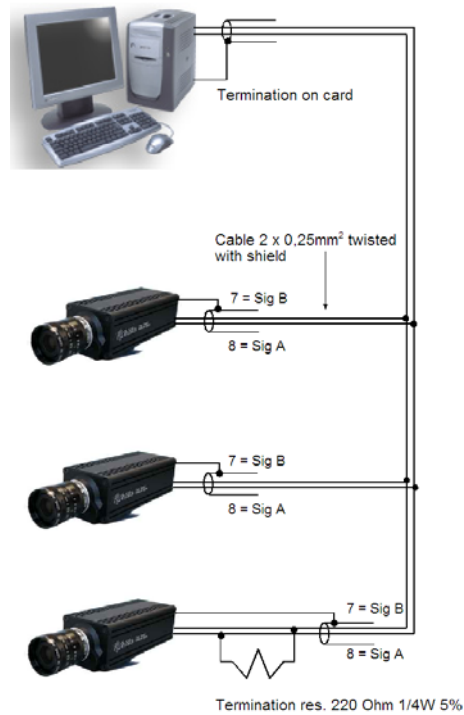
NOTE: In order to set Smart Reader M1 to LINKER MODE: hold the switch pushed for a pair of second when switching on.

Example Input/Output

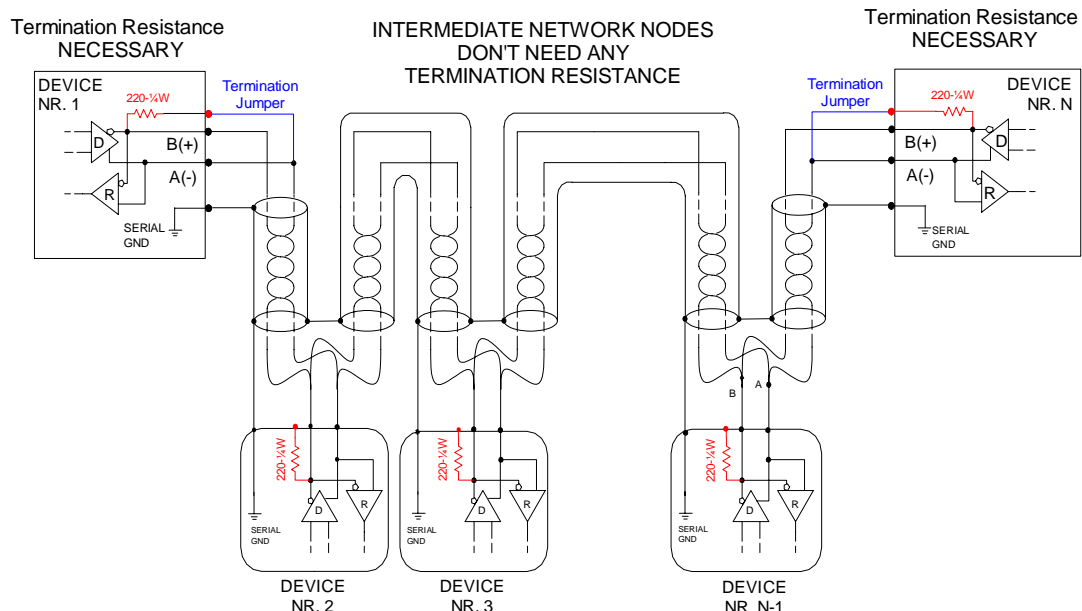


Esempio di collegamento Rs-485 con PC

Personal Computer



Example Rs-485 network



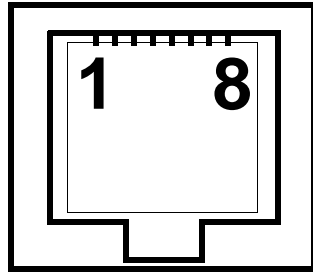
The internal termination resistance must be CONNECTED only on the first and the last devices of the chain.

All devices between the external node must not be terminated.

The shield of the cable must be linked to Serial GND of any devices of the chain.

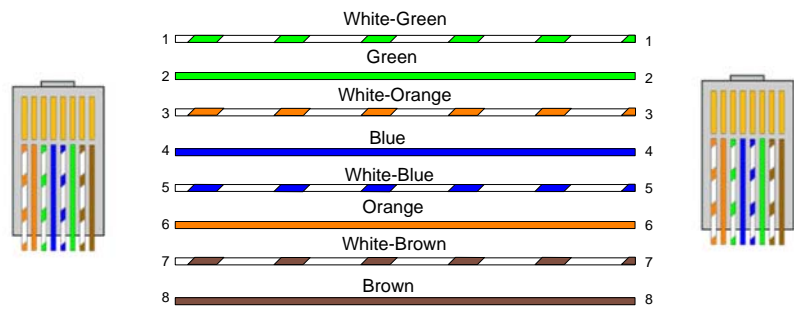
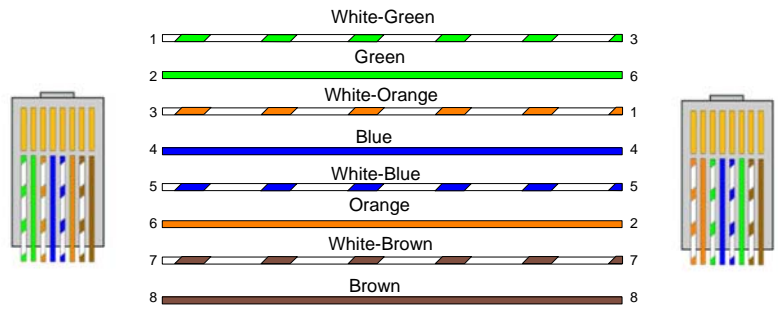
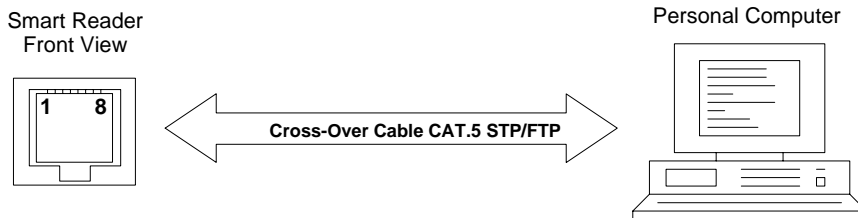
FVS unit comprises terminal resistance.

Ethernet RJ45 8 pin connector



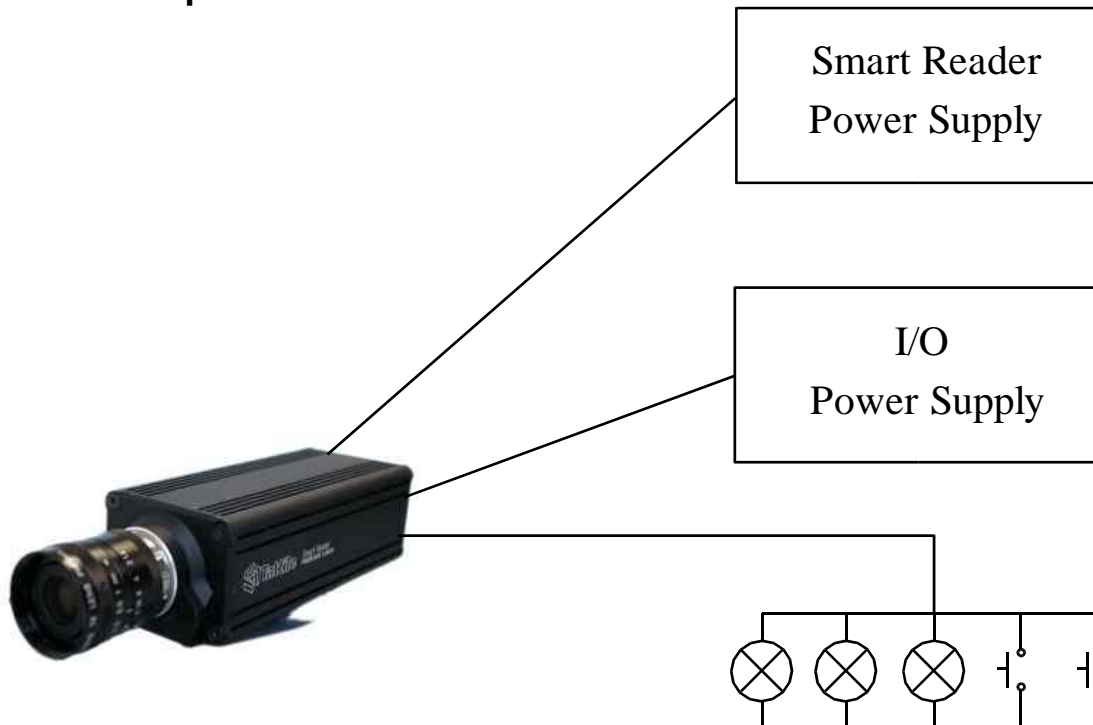
- 1 = TX +(Smart reader M1)
- 2 = TX -(Smart reader M1)
- 3 = RX +(Smart reader M1)
- 6 = RX -(Smart reader M1)
- 4,5,7,8 = N.C.

Ethernet cable

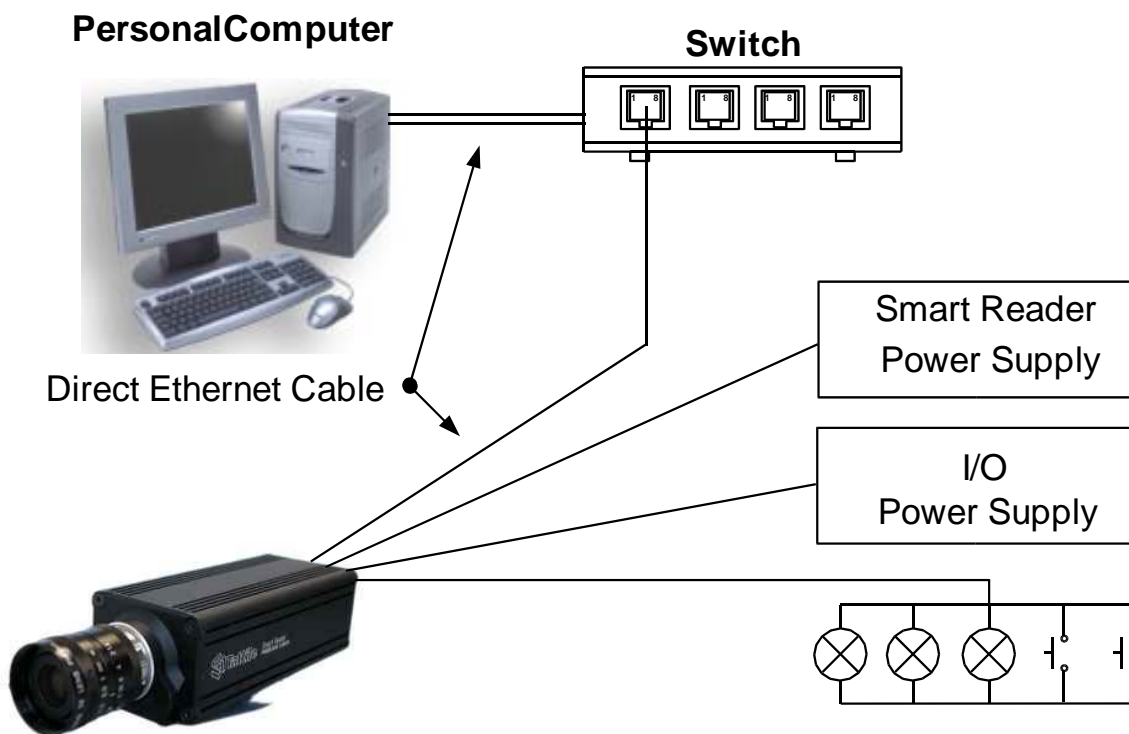


Ethernet connection example

Connection example of Smart Reader M1 Stand Alone



Connection example of Smart Reader M1 – PC by means of a switch

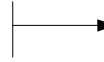


Connection example of Smart Reader M1 - PC

Personal Computer

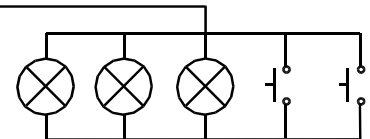


Ethernet Crossover Cable



Smart Reader Power Supply

I/O Power Supply



Note: When the Smart Reader M1 is directly connected with the PC use the Ethernet Crossover Cable.

Troubleshooting

The Smart Reader has self-resetting fuses. If a protection device should intervene, switch off the machine and wait for thirty seconds before switching it back on again.

Remember that opening the equipment invalidates the warranty

Problem: the system does not switch on

Operations to perform:

1. Check that the Power indication Led is on.
2. Check for the presence of the 24 VDC power supply from the external power supply unit.
3. Check for the correct polarity of the power supply cable
4. Check for the presence of the 220 VAC main supply.

Problem: The camera image does not appear on the Computer.

Operations to perform:

1. Check that the Ethernet network cable is the suitable one (direct or twisted).
2. Check that the right IP address is set into the software.
3. Check that the iris is sufficiently open and that the lens cap has been removed.

Problem: The image grabbed by the system is out of focus.

Operations to perform:

1. Set the system into direct mode, and check the focusing, adjusting the lens ring if necessary. If the part is on focus when still, but out of focus when moving, make certain that the correct shutter time has been set for the camera. Refer to the introduction of the Antares Explorer user manual ("Dynamic regime analysis" paragraph).

Problem: The brightness of the image seems to vary continuously.

Operations to perform:

1. Switch off the lights, especially the neon ones, which are not part of the illumination system supplied with the equipment. Shield the control station from external light infiltration and switch off surrounding lights as far as possible.

Problem: Difficult in the serial communication between the system and a Personal Computer

Operations to perform:

1. Check that the serial cable supplied is connected to the correct serial port of the Personal Computer (COM1 or COM2 depending on the software).
2. Check that the data-interchange software currently used on the Personal Computer refers to the same serial port to which the connection cable is connected.
3. Check that there are no mouse management programs active on the Personal Computer (e.g. MOUSE.COM in the AUTOEXEC.BAT file) referring to the same serial port used for connection to the Smart Reader M1. If affirmative, remove the call instructions and restart the Personal Computer.
4. Check the soldering of the serial connection cable by comparing it with the diagram shown in this manual.

For any other problems, please contact your distributor.

Norms for a correct installation of TATTILE machine vision equipment

Good equipment operation is guaranteed only by respecting the instructions cited in this reference manual.

TATTILE declines all responsibility for anomalous equipment operation, installed with criteria not respecting these instructions.

- Fixing of the Smart Reader M1 must be done using only M6 screws generating an tightening force max 3 Nm.
- Smart Reader M1 cable courses must be kept separated from power cables.



- Pay attention to the various connections, especially in respect to the correct polarity of the power-supply cables.
- Supply the Smart Reader M1 with a dedicated power-supply (24V 12W) .



- The 24V I/O voltage that powers inputs and outputs must never be taken from the same power source as the Smart Reader M1 and above all the masses must be split (negative pole).
- The maximum length of the power supply cable is 2mt. This cable must be screened and be not longer than necessary.
- Smart Reader M1 must be fixed to structures well connected to the ground, mechanically stable and immune to vibration.

WARNING!

The warranty covering TATTILE equipment is invalidated when :

1. The equipment has been opened or tampered with
2. Faults have been detected that are due to incorrect connection of the power or input/output circuits
3. Faults are due to overload or no-compliance with rated specifications of equipment.
4. Application is conducted in conditions that do not comply with those specified for a correct installation.



Note: These conditions apply to all equipment supplied with the system.

Revision

The Revision Index is reported below. The various revisions can contain additional information or corrections of printing errors.

Rev.	Date	Page	Description	Prepared	Checked	Approved
1.8	OCTOBER 2001	17	Revision index introduction page			
1.9	NOVEMBER 2001	7	Note about Smart Reader M1 linker mode			
2.0	FEBRUARY 2002	All	General Language revision			
2.1		5	Lens mount mechanical modify			
2.2	MARCH 2002	10	Ethernet connection cable modify			
2.3	JUNE 2002	6,7,8,9, 10	Introduced information about the presence of optical filter on the camera.			
2.4	OCTOBER 2002	13	Errata corrige: the fifth note "ALL THE MASS MUST NOT BE SPLIT (NEGATIVE POLE)" was incorrect.			
2.5	DECEMBER 2002	7,9,10	Correct the description of 15 PF connector pinout: Pin7 is RS 485 B, Pin 8 is RS-485 A. Correct the example of RS-485.			
02.00.06	NOVEMBER 2003	All	Graphical restyling	Nicola G.	Massimiliano D.	Andrea S.