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TECHNICAL DATA SHEET

T-TOP control unit

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Summary

COMPONENT DESCRIPTION AND APPLICATION	3
COMPONENT DESCRIPTION AND APPLICATION	4
REGULATORY REFERENCES	5
REGULATORY REFERENCES	6
COMPONENTS AND MATERIALS	7
T-TOP CONFIGURATION: CLASSIC LED BOARD	7
COMPONENTS AND MATERIALS	8
T-TOP CONFIGURATION: LED BOARD with AS-i	8
INSTALLATION AND MAINTENANCE	9
INSTALLATION AND MAINTENANCE	10
TECHNICAL DATA	11
TECHNICAL DATA	12
TECHNICAL DATA COMPONENT: SOLENOID VALVE	12
TECHNICAL DATA	13
LED TERMINAL BLOCK	13
TECHNICAL DATA	14
INDUCTIVE SENSOR: PNP and CONNECTION TO THE ELECTRICAL NETWORK	14
TECHNICAL DATA	15
INDUCTIVE SENSOR: PNP and CONNECTION TO THE ELECTRICAL NETWORK	15
TECHNICAL DATA	16
AS-i NETWORK BOARD	16
TECHNICAL DATA	17
AS-i NETWORK BOARD	17
TECHNICAL DATA	18
AS-I NETWORK BOARD	18
TECHNICAL DATA	19
IMPLEMENTATION BOARD FOR AS-i CONNECTION	19
COPYRIGHT E DISCLAIMER	20

COMPONENT DESCRIPTION AND APPLICATION

The **TASSALINI T-TOP** control unit, thanks to the presence of an indicator **LED**, allows real-time verification of the valve position at 360°.

This type of component can be installed on all valves controlled by **SINGLE-ACTING PNEUMATIC ACTUATORS**, whose details are provided in the specific technical datasheets.

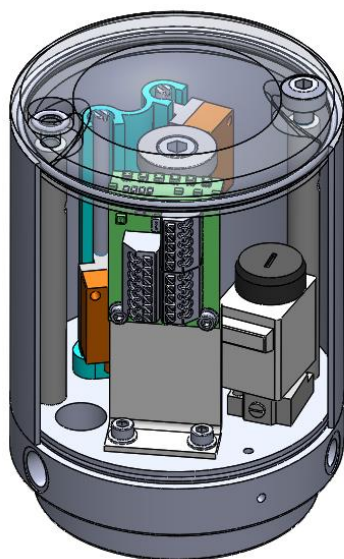
The control unit is mainly composed of inductive sensors capable of indirectly detecting the position of the valve shutter.

In the case of **BUTTERFLY** or **BALL VALVES**, this is achieved through a **CAM** mechanism that transforms the translational motion of the actuator stem into the rotary motion of the valve shutter.

If the valves are **DIAPHRAGM** or **PNEUMATIC**, a simple vertical translational motion occurs, with a direct connection between the actuator stem and the valve shutter.

When the **proximity SENSOR** detects the presence of the magnet.

T-TOP UNIT CONTROL



- Mounting options on:
 1. Vertical pneumatics cylinder
 2. Single acting cylinder
- Suitable for determining the position of:
 1. Ball valves
 2. Butterfly valves
 3. Diaphragm valves
 4. Pneumatic valves
- Connection options
 1. Direct
 2. AS-i as sub system
- Control unit body in stainless steel

COMPONENT DESCRIPTION AND APPLICATION

FEATURES

The **TASSALINI T-TOP** control unit is designed and developed to optimize the operation status control of ball or butterfly valves operated by single-acting vertical pneumatic cylinders.

Thanks to the presence of a terminal block connected to a signalling **LED**, it is possible to determine the position of the shutter in 360°.

The reliability of the control unit, even in the most demanding work environments, is ensured by the presence of **INDUCTIVE SENSORS**; these are insensitive to vibrations, dust, or humidity.

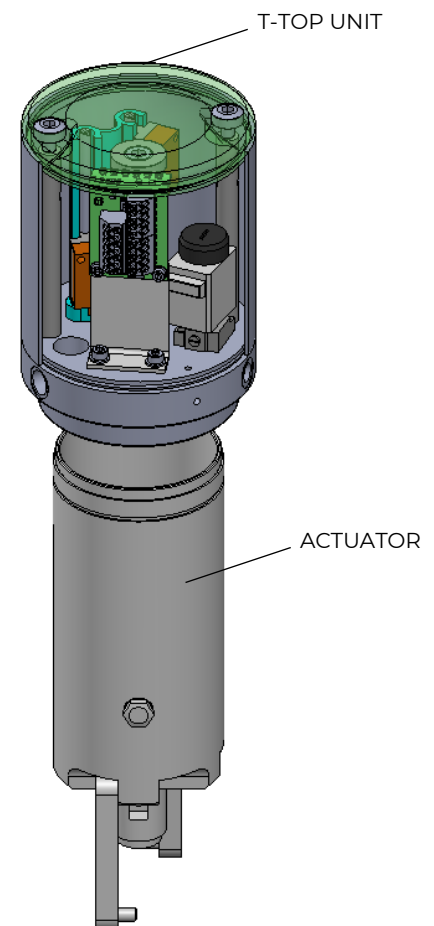
A slave board for the **AS-interface** network can be installed in the **T-TOP** control unit.

This technology allows the entire valve network to be remotely controlled, and thanks to a parallel connection using a 2-wire cable, it is possible to collect all the network data and power sensors and solenoid valves.

It is possible to connect the **AS-i** network in a decentralized manner as a sub-system, controlled by higher-level bus systems.

The installed solenoid valves are of the 3/2 types, 3-way and 2-position, and in the event of a power failure, they can be manually operated.

For further clarification regarding the application, please contact our technical department.





REGULATORY REFERENCES

EUROPEAN DIRECTIVES - LED SIGNAL LIGHT

The LED signal light of the TASSALINI T-TOP control unit complies with the association of colors and valve positions according to the following standards:

- **EN-60204-1** (Safety of machinery - Electrical equipment of machines): detailed guidelines for the installation and use of electrical components, including LEDs and valves.
- **EN-61310** (Safety of machinery - Visual, acoustic, and tactile signals) provides specific directives for the design and use of signalling devices, such as LEDs and valve position indicators.

In particular, according to the aforementioned standard, the following color associations apply:

Red: Hazard or alarm status. It must be used to indicate a situation requiring immediate action. The component is in a non-operating state.

Green: Normal condition, safe operation. The component is functioning correctly.

In the subsequent section, the color combinations associated with the position of the shutter will be specified

The **TASSALINI T-TOP** control unit complies with the **CEI-EN 60204-1** standard, which provides the requirements and recommendations related to the electrical equipment of machines, aimed at ensuring:

- The safety of people and property;
- Appropriate response to commands;
- Ease of use and maintenance.

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REGULATORY REFERENCES

EUROPEAN DIRECTIVES - DEGREE OF PROTECTION FOR ENCLOSURES

The **TASSALINI T-TOP** control unit is certified with an IP67 protection rating:

- **IEC-60529 Directive** for the degree of protection of enclosures.

Customer/Applicant	Tassalini S.p.a Via Giuseppe di Vittorio, 19/21 20068-Peschiera Borromeo (MI)-Italy
Manufacturer/Owner	Tassalini S.p.a Via Giuseppe di Vittorio, 19/21 20068-Peschiera Borromeo (MI)-Italy
Test site/Facility	Eurofins Product testing Italy S.r.l Via Cuornè n.21 10156 Torino
References Standard	IEC 60529:1989+A1:1999+A2:2013+COR1:2019, EN60529:1991+AC:1993+A1:2000+A2:2013 +AC:2016+AC:2019 Degree of Protection for Enclosures (IP Code)
Test Purpose	Measure the protection rating: IP67
Tested Object	Vertical pneumatic cylinder equipped with a control unit

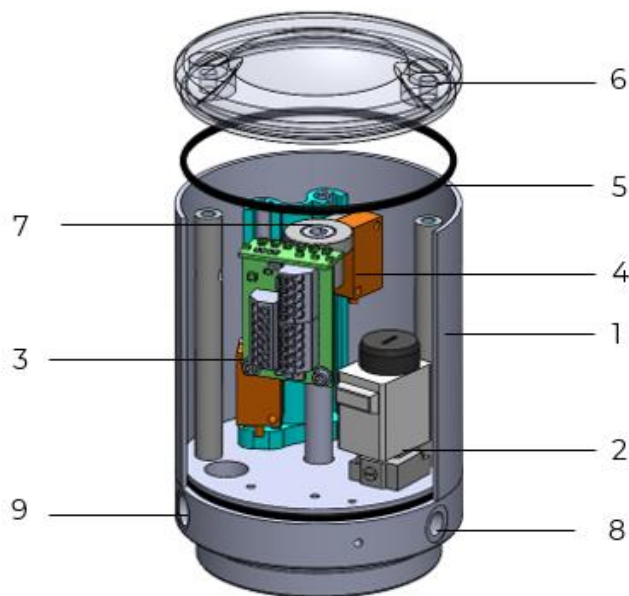
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COMPONENTS AND MATERIALS

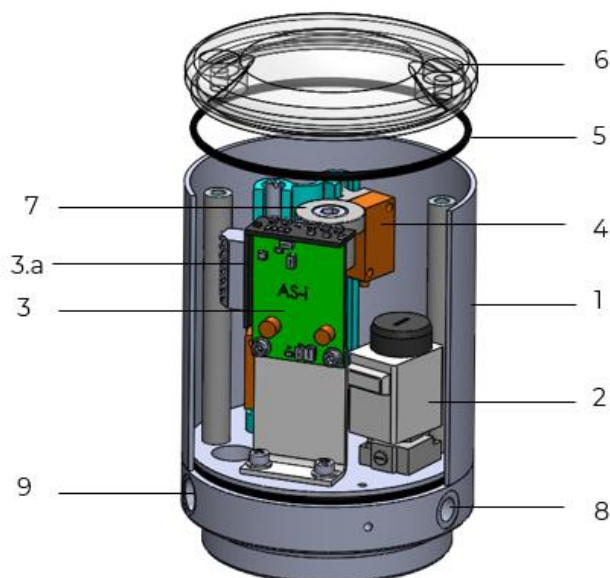
T-TOP CONFIGURATION: CLASSIC LED BOARD



N° Description	Q.ty	Material	EN	ASTM
1 Enclosure	1	Stainless Steel	X2CrNi 18-9	Aisi 304L
2 Solenoid Valve	1	-	-	-
3 LED Board	1	PA66	UNI EN ISO 1043-1	ASTMD1600
4 Proximity Sensor	2	-	-	-
5 Gasket	2	NBR	ISO 1629	-
6 Cover	1	PP	UNI EN ISO 1043-1	ASTMD1600
7 Proximity Pin	1	Stainless Steel	X2CrNi 18-9	Aisi 304L
8 Air Inlet	1	Stainless Steel	X2CrNi 18-9	Aisi 304L
9 Connector Inlet	1	Stainless Steel	X2CrNi 18-9	Aisi 304L

COMPONENTS AND MATERIALS

T-TOP CONFIGURATION: LED BOARD with AS-i



N° Description	Q.ty	Material	EN	ASTM
1 Enclosure	1	Stainless Steel	X2CrNi 18-9	Aisi 304L
2 Solenoid Valve	1	-	-	-
3 AS-i board	1	PCB (standard IPC-4101)	-	-
3.a Support "L" AS-i board	1	PCB (standard IPC-4101)	-	-
4 Proximity Sensor	2	-	-	-
5 Gasket	2	NBR	ISO 1629	-
6 Cover	1	PP	UNI EN ISO 1043-1	ASTMD1600
7 Proximity pin	1	Stainless Steel	X2CrNi 18-9	Aisi 304L
8 Air Inlet	1	Stainless Steel	X2CrNi 18-9	Aisi 304L
9 Connector Inlet	1	Stainless Steel	X2CrNi 18-9	Aisi 304L

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INSTALLATION AND MAINTENANCE

The following are some observations to keep in mind during the installation and maintenance of the control unit. For specific instructions, please refer to the user and maintenance manual of the specific product. For any specific information, please contact our technical office.

GENERAL GUIDELINES: INSTALLATION

All operations related to installation must be carried out in compliance with local safety regulations and instructions. All components must be handled by experienced professionals.

The maintenance of the control unit is the responsibility of trained and technically qualified personnel.

Before performing any operation, verify that there is no fluid under pressure and/or at high temperatures in the line, and that there is no source of electrical tension.

The operator must never be exposed to potential hazards, and before any operation, the area and components must be secured.

Properly align the pipes to avoid subjecting the valve body to unusual stresses. Verify the compatibility of any mounting flanges with the operating pressure: the PN value of the flanges must be equal to or greater than the operating pressure.

GENERAL GUIDELINES: MAINTENANCE

Maintenance must be performed by experienced and qualified personnel. All maintenance operations, of any type, must be carried out in accordance with local safety regulations.

Components require specific maintenance to ensure their maximum useful working life.

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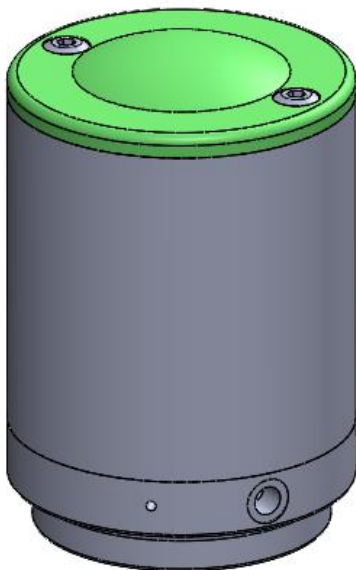


INSTALLATION AND MAINTENANCE

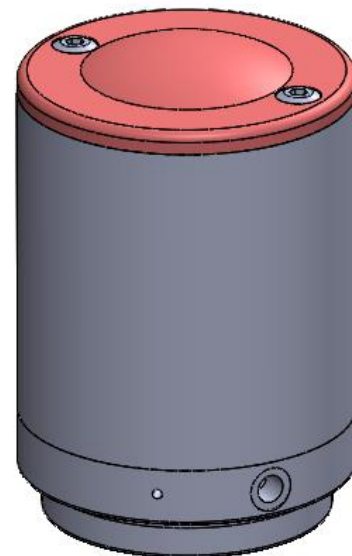
The following images show the working status of the valve according to standards **EN-60204-1** and **EN-61310**.

Through the inductive sensors installed in the control unit, which communicate with the PLC, it is possible to determine the position of the actuator.

VALVE OPEN: permitted fluid passage
ACTUATOR OPEN



VALVE CLOSED: not permitted fluid passage.
ACTUATOR CLOSED



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TECHNICAL DATA

The **TASSALINI T-TOP** control unit can be installed on valves with butterfly, ball, or diaphragm actuators controlled by **SIMPLE EFFECT VERTICAL PNEUMATIC CYLINDERS**.

Below are the usage conditions under which the control unit ensures maximum durability and reliability. For usage conditions different from those indicated, **TASSALINI S.p.a.** disclaims all responsibility related to damages or malfunctions

USAGE CONDITIONS AND TECHNICAL DATA FOR THE TASSALINI T-TOP CONTROL UNIT:

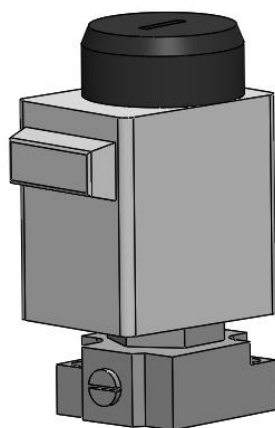
USAGE CONDITIONS AND TECHNICAL DATA	
Protection Class	IP67
Air Connection Diameter	1/8"
Electrical Connection Diameter (with PG7 cable gland)	PG7
Air Pressure Used [bar]	6-7
Operating Temperature [°C]	-10 +25
Compressed Air Quality Class	ISO 8573-1: Class 2,4,3
Supply Voltage [VDC]	24
FieldBus Communication	AS-i



TECHNICAL DATA

TECHNICAL DATA COMPONENT: SOLENOID VALVE

The following are the technical data related to the 3/2 solenoid valves installed in the **TASSALINI T-TOP** control unit.



SOLENOID VALVE TECHNICAL DATA

Electrical data

Operating voltage [V]	24 V DC
Power consumption [VA]	min 3,5; 5 VA

Pressure

Working pressure [bar]	0-10
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Environmental Conditions

Temperature range	-40 °C+140 °C
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TECHNICAL DATA

LED TERMINAL BLOCK

The following are the main characteristics of the terminal block connected to the **LED** outputs.

In particular, the characteristics of the materials of the individual components and the parameters related to the working conditions are provided.

COLOR DATA: LED TERMINAL BLOCK	
Color	Grey
Material Group	I
Insulating Material	Polyamide (PA66)
Flammability Class (UL 94)	V0
Clamp spring material	Copper Alloy
Contact Plating	Tin Plated
Fire Load [MJ]	0.056

TECHNICAL DATA LED TERMINAL BLOCK	
Operating Voltage [VDC]	24
Nominal Current [mA]	100
Wire Section [mm ²]	0.2/1.5
American Wire Gauge [AWG]	AWG 24-16



TECHNICAL DATA

INDUCTIVE SENSOR: PNP and CONNECTION TO THE ELECTRICAL NETWORK

The inductive sensors present in the **TASSALINI T-TOP** control unit can be of two types:

- **PNP:** DC output signal

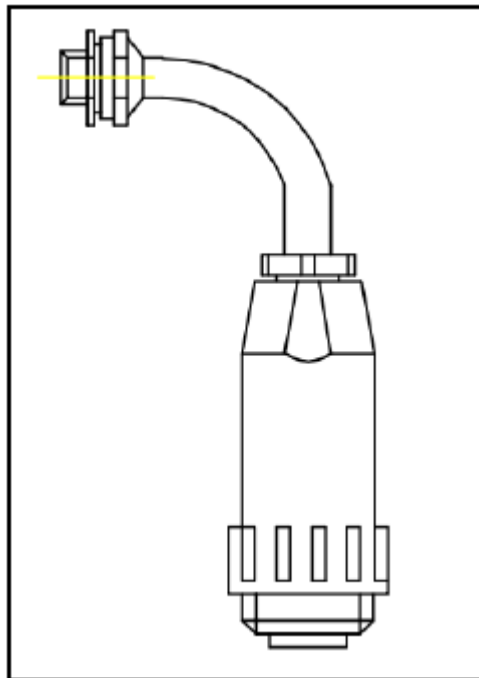
The following summarizes the main electrical characteristics of both.

PNP MODEL	
Electrical data	
Operating Voltage [V]	10-30
Current Consumption [mA]	15
Isolating Class	III
Reverse polarity protection	YES
Outputs	
Electrical Model	PNP
Output Function	NO
Max. voltage drop at switching output[V]	2.5
Continuous Current Capacity of Switching Output [mA]	200
Switching Frequency [Hz]	2000
Short circuits protection	YES
Overload resistance	YES
Environmental Conditions	
Ambient Temperature [°C]	-20/+70
Protection Class	IP67

TECHNICAL DATA

INDUCTIVE SENSOR: PNP and CONNECTION TO THE ELECTRICAL NETWORK

The connection of the control unit to the network is made via the connector [model 030](#), the characteristics of which are detailed below.



CONNECTOR 030 S

TECHNICAL DATA CONNECTOR 030S	
Operating Voltage [V AC]	250
MAX Current [A]	8
Connector Size	PG7
Possibility to have the cable gland	YES

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TECHNICAL DATA

AS-i NETWORK BOARD

The **AS-i** technology is a serial communication system that connects digital field devices, such as sensors, actuators, and other devices, to a central controller, such as a **PLC** or a **PC**.

The **AS-i** system can manage up to 62 devices per network. This number can be expanded using gateways or higher-level systems that connect multiple **AS-i** networks, allowing for the management of an even greater number of devices in a complex industrial automation configuration.

The main advantages of the possibility offered by **TASSALINI** to install an **AS-i** board are related to cost reduction, reliability, and robustness of the system.

Finally, in addition to direct connection, the **AS-i** network can be used as a subsystem. **AS-i**, as a subsystem, offers an efficient, flexible, and scalable solution for valve management, improving integration, reducing costs, and increasing the reliability of systems. To achieve this, it is sufficient to have an **AS-i** controller that contains, in addition to the **AS-i Master**, a **Profibus** interface.

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TECHNICAL DATA

AS-i NETWORK BOARD

The following are the electrical data for the **AS-i** board of the **TASSALINI T-TOP** control unit:

AS-i PCB MODULE

Electrical Data

Operating Voltage [V]	26.5-31.6 DC
Current Consumption [mA]	<200
Total Current Capacity [A]	0.18*
Integrated Watchdog	YES

Inputs

Number of digital Inputs	3
Input circuits for digital inputs	PNP
Input Power Supply	AS-i
Supply Voltage [V]	20-30 DC
Short-circuit protection for digital inputs	SI'

* Total current for all inputs and outputs powered by AS-i is 180 mA.

Continues on the next page



TECHNICAL DATA

AS-I NETWORK BOARD

AS-i technology is a serial communication system that connects digital field devices, such as sensors, actuators, and other devices, to a central controller, such as a **PLC** or a **PC**.

The use of a single communication cable to transmit power and data helps to reduce complex wiring and simplifies installation, thereby reducing costs and installation time.

The following are the electrical data for the **AS-i** board of the **TASSALINI T-TOP** control unit:

AS-i PCB MODULE	
Outputs	
Number of digital outputs	3
Electric Model	PNP
Voltage range [V]	18-30 DC
Current capacity for outputs [mA]	180**
Short Circuit Resistance	YES
Actuator Power Supply	AS-i
Environmental Conditions	
Ambient temperature [°C]	-20/+70

**Observe the total current capacity for all inputs and outputs.

For further clarification regarding the components described above, please contact our technical office.

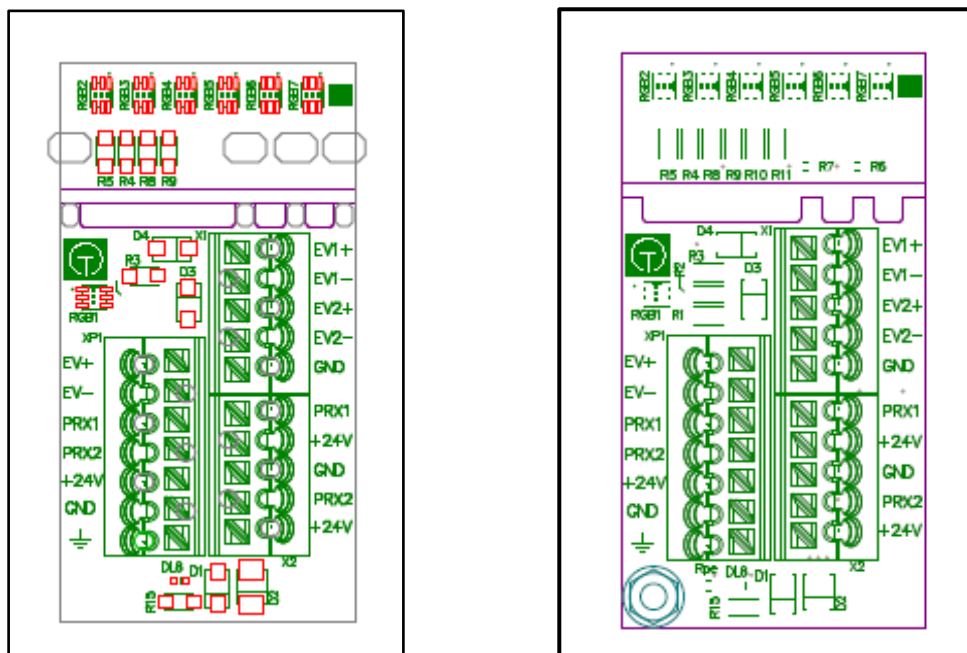
TECHNICAL DATA

IMPLEMENTATION BOARD FOR AS-i CONNECTION

To ensure a better connection between the **LED** signals and the **AS-i** board, **TASSALINI S.p.a** has developed a component that acts as an intermediary between these two elements.

The layout of the electrical diagram shown below illustrates the assembly layout of these two elements.

ASSEMBLY LAY-OUT LC:



IMPLEMENTATION BOARD FOR AS-i CONNECTION TECHNICAL DATA

Operating Voltage [V]

24

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