

## Schede Plc Abb e PC Galleria

ABB S.p.A.



## **PC DI CABINA COME DA SPECIFICA**

### **PC Desktop non industriale**

Processore Intel Core I5

RAM 8Gb

Scheda video integrata

HDD 250Gb

Scheda di rete 10/100

Tastiera e Mouse

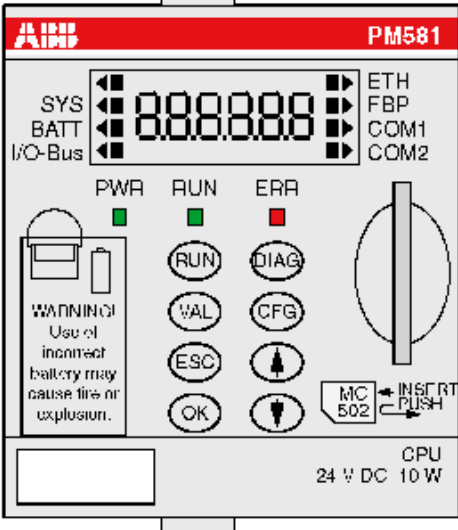
Schermo 21" Full HD

Sistema operativo Windows 7 Professional

## PLC DI CABINA

### SPECIFICHE TECNICHE

#### Unità Centrale AC500



The CPU statuses are displayed on the CPU front face with 3 LEDs:

- PWR
- RUN
- ERR
- and by means of a background-lighted display

The display contains the following indications:

- ■ small black squares indications acting as a LED status for the device written beneath
- ► small black arrows used for indication by pointing the selected device to be configured or read
- 6 x 7-segment displays for "plain text" or error codes display

### Condizioni Operative ed ambientali

Voltages, according to EN 61131-2		
24 V DC	process and supply voltage	24 V DC (-15 %, +20 % without ripple)
	absolute limits	19.2 V...30 V inclusive ripple
	Ripple	< 5 %
	protection against reverse polarity	10 s
120 V AC	line voltage	120 V AC (-15 %, +10 %)
	Frequency	47 Hz..62.4 Hz / 50...60 Hz (-6 %, +4 %)
230 V AC	line voltage	230 V AC (-15 %, +10 %)
	Frequency	47 Hz..62.4 Hz / 50...60 Hz (-6 %, +4 %)
120-240 V AC	wide-range supply	
	line voltage	102 V...264 V / 120 V...240 V (-15 %, +10 %)
	Frequency	47 Hz..62.4 Hz / 50...60 Hz (-6 %, +4 %)



Allowed interruptions of power supply, according to EN 61131-2		
	DC supply	interruption < 10 ms, time between 2 interruptions > 1 s, PS2
	AC supply	Interruption < 0.5 periods, time between 2 interruptions > 1 s



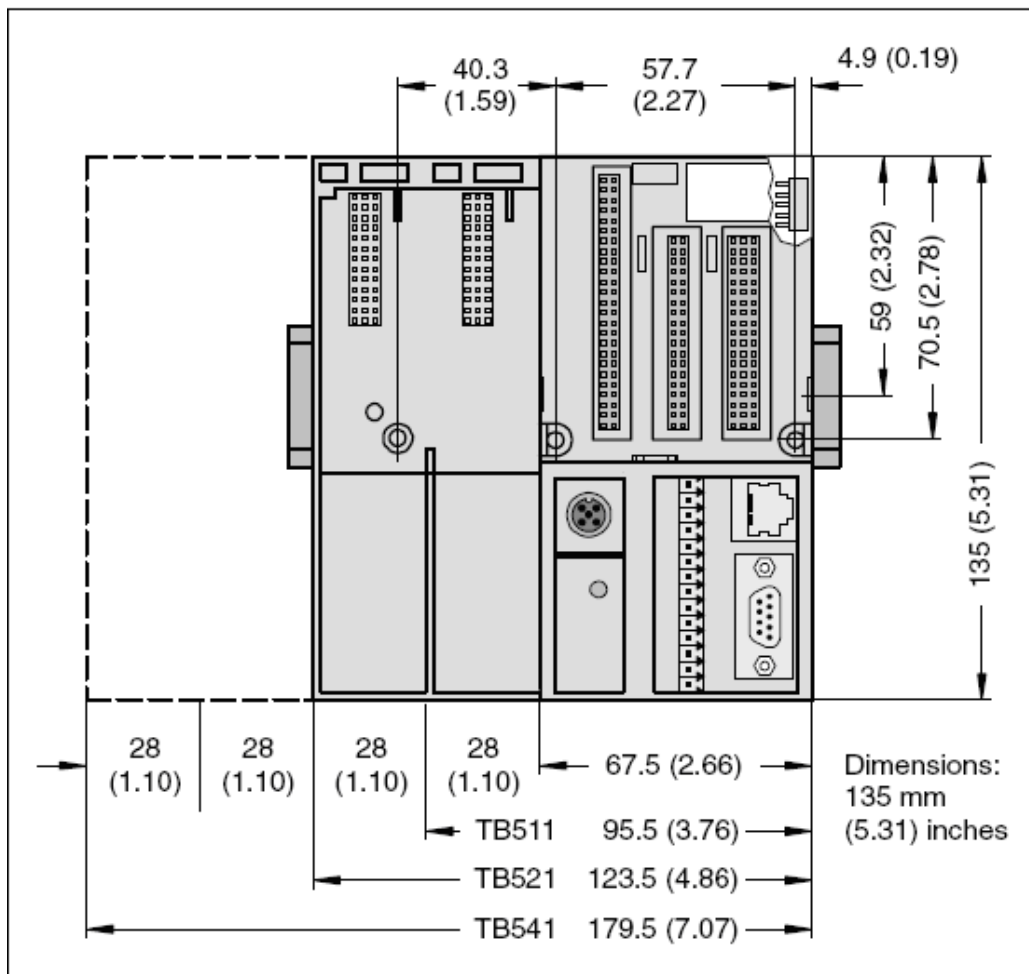
**Important:** Exceeding the maximum power supply voltage (>30 V DC) for process or supply voltages could lead to unrecoverable damage of the system. The system could be destroyed.

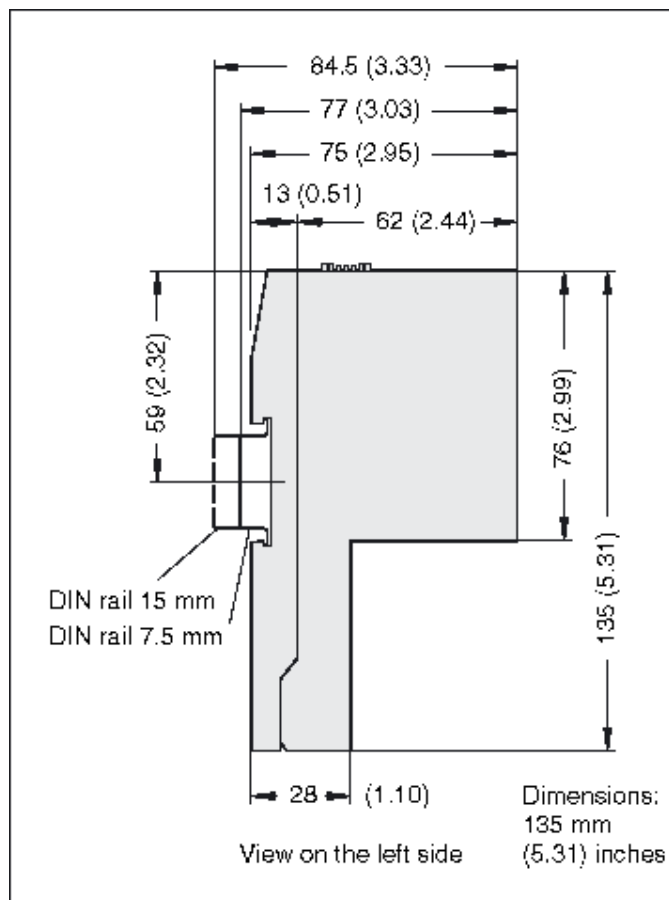
Temperature		
	Operating	0 °C...+60 °C (horizontal mounting of modules) 0 °C...+40 °C (vertical mounting of modules and output load reduced to 50 % per group)
	Storage	-25 °C...+75 °C
	Transport	-25 °C...+75 °C
Temperature of the Lithium battery		
	Operating	0 °C...+60 °C
	Storage	-20 °C...+60 °C
	Transport	-20 °C...+60 °C
Humidity		max. 95 %, without condensation
Air pressure		
	Operating	> 800 hPa / < 2000 m
	Storage	> 660 hPa / < 3500 m

#### Informazioni meccaniche

Wiring method / terminals	
Mounting	horizontal
Degree of protection	IP 20
Housing	according to UL 94
Vibration resistance acc. to EN 61131-2	all three axes 2 Hz...15 Hz, continuous 3.5 mm 15 Hz...150 Hz, continuous 1 g (4 g in preparation)
Vibration resistance with SD Memory Card inserted	15 Hz...150 Hz, continuous 1 g
Shock test	all three axes 15 g, 11 ms, half-sinusoidal
Mounting of the modules	
- DIN rail according to DIN EN 50022	35 mm, depth 7.5 mm or 15 mm
- mounting with screws	screws with a diameter of 4 mm
fastening torque	1.2 Nm

## Dimensioni meccaniche delle basi terminali AC500 (TB511, TB521 e TB541)







### Caratteristiche CPUs

CPU	Program memory	Cycle time for 1000 instructions	Network interface		Other interfaces	Suitable Terminal Bases
			Ether-net	ARC-NET		
PM571	64 kB	Binary: 0.3 ms Word: 0.3 ms Floatingpoint: 6 ms			Serial interfaces COM1 and COM2, FBP, coupler interface, I/O-Bus	TB5xx-xx
PM571-ETH			yes			TB5xx-ETH
PM581	256 kB	Binary: 0.15 ms Word: 0.15 ms Floating point: 3 ms				TB5xx-xx
PM581-ETH			yes			TB5xx-ETH
PM581-ARCNET				yes		TB5xx-ARCNET
PM582	512 kB					TB5xx-xx
PM582-ETH			yes			TB5xx-ETH
PM590	2 MB					TB5xx-xx
PM590-ETH			yes			TB5xx-ETH
PM590-ARCNET				yes		TB5xx-ARCNET
PM591	4 MB	Binary: 0.02 ms Word: 0.01 ms Floating point: 0.02 ms				TB5xx-xx
PM591-ETH			yes			TB5xx-ETH
PM591-ARCNET				yes		TB5xx-ARCNET

### Basi Terminali

Numero di Slot

Terminal Base	TB511	TB521	TB541
Slots for CPUs	1	1	1
Slots for communication modules	1	2	4





# Termini ed interfaccia

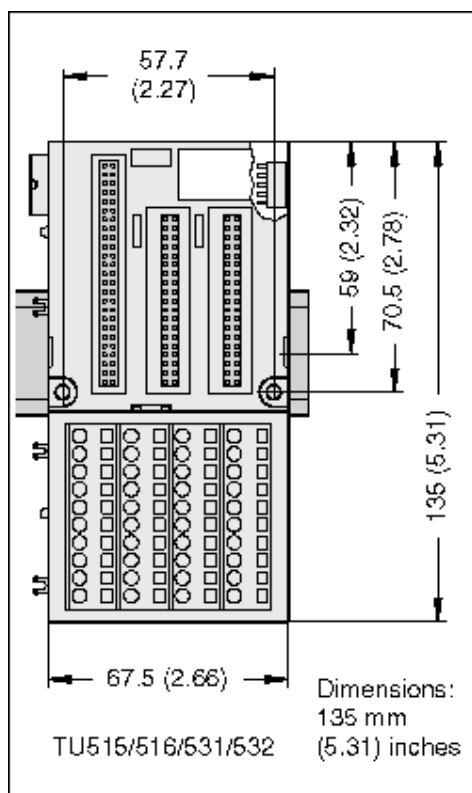
Terminal Base	TB511-		TB521-		TB541-	
available = (x)	ETH (x)	ARCNET	ETH (x)	ARCNET (x)	ETH (x)	ARCNET
Connection						
I/O-Bus	I/O interface for directly adding up to 7 I/O Terminal Units *)					
Power supply	5-pole removable terminal block					
COM1	serial interface, 9-pole removable terminal block					
COM2	serial interface, 9-pole SUB-D connector (female)					
Network interface (type must be equal to the type of the used CPU)	Ethernet RJ45	ARCNET BNC	Ethernet RJ45	ARCNET BNC	Ethernet RJ45	ARCNET BNC
FBP interface	Fieldbus-neutral slave interface (M12, 5-pole, male, fastening with screw)					

\*)se entrambe le seguenti condizioni sono soddisfatte, è possibile collegare fino ad un **Massimo di 10 moduli** di espansione sul bus della CPU (moduli centralizzati):

- PS501 versione V1.2
- CPUs firmware versione V1.2.0

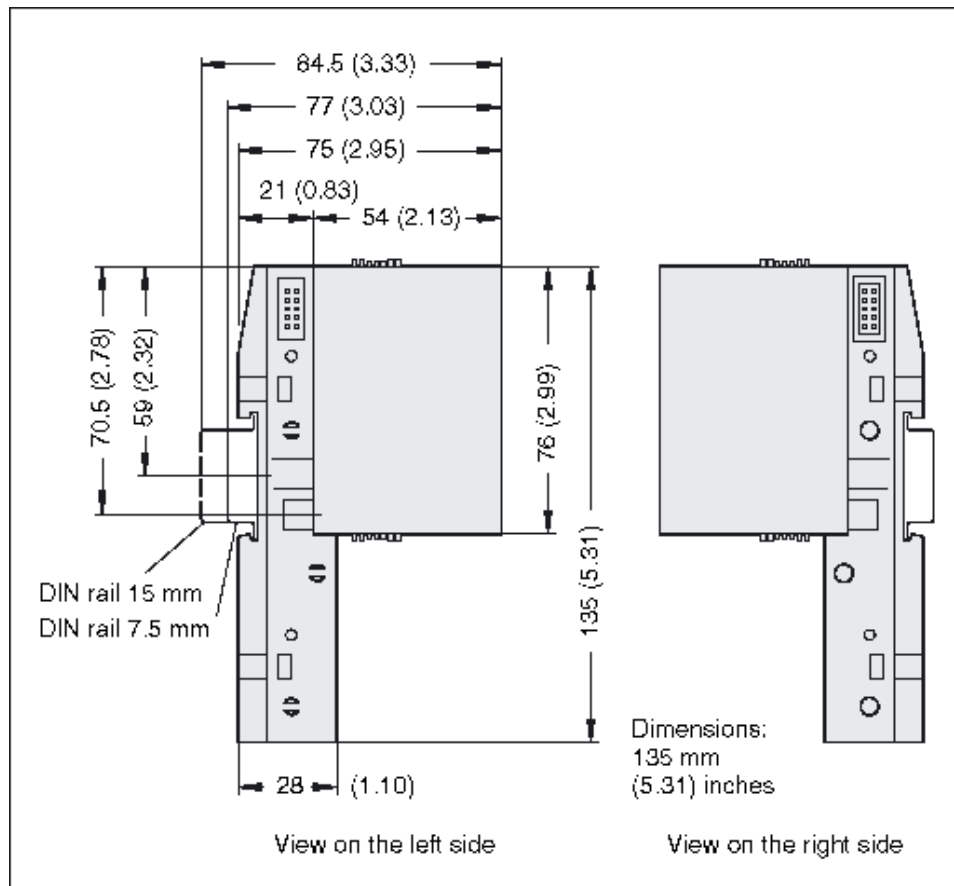
*Moduli Ingresso/Uscita e moduli bus (DC505 e DC551)*

**Dimensioni basi terminali TU515-TU516-TU531-TU532\***



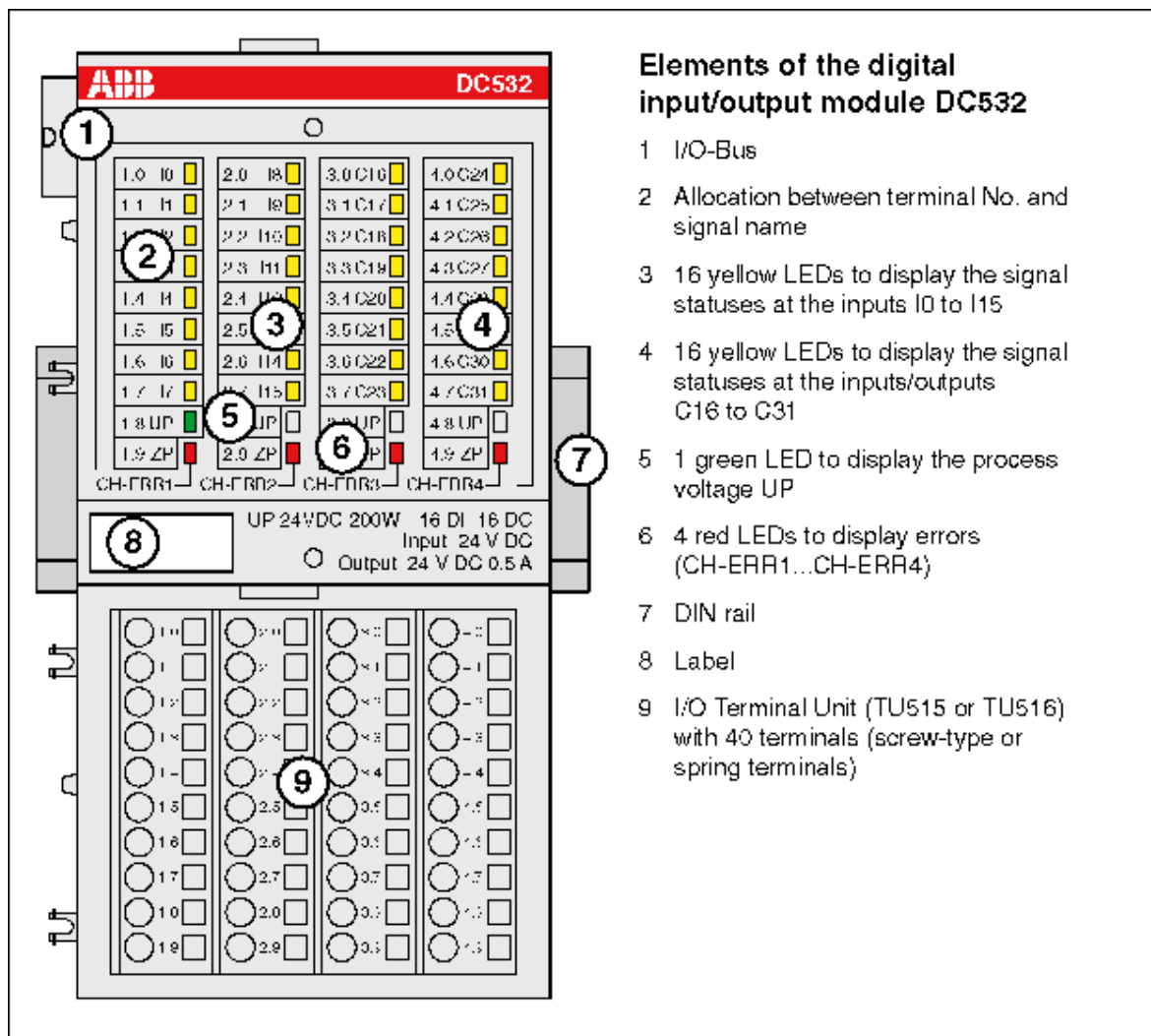
\*

- TU515: Base Terminale per moduli ingresso/uscita digitale/analogico con morsettiera a vite
- TU516: Base Terminale per moduli ingresso/uscita digitale/analogico con morsettiera a molla
- TU531: Base Terminale per moduli ingresso/uscita a relé con morsettiera a vite
- TU532: Base Terminale per moduli ingresso/uscita a relé con morsettiera a molla



## DC532

16 input digitali 24 V DC, 16 punti digitali configurabili (input o output)



## Funzionalità

Digital inputs	16 (24 V DC)
Digital inputs/outputs	16 (24 V DC)
High-speed counter	integrated, many configurable operating modes (only with AC500)
LED displays	for signal statuses, errors and supply voltage
Internal power supply	through the expansion bus interface (I/O-Bus)
External power supply	via the terminals ZP and UP (process voltage 24 V DC)



### Dati Tecnici Modulo

Process supply voltage UP	
- Connections	Terminals 1.8 - 4.8 for +24 V (UP) and 1.9 - 4.9 for 0 V (ZP)
- Rated value	24 V DC
- max. ripple	5 %
- Protection against reversed voltage	yes
- Rated protection fuse on UP	10 A fast
- Electrical isolation	yes, per module
Current consumption	
- internal (via I/O-Bus)	ca. 5 mA at 3.3 V DC
- current consumption from UP at normal operation / with outputs	0.05 A + max. 0.008 A per input + max. 0.5 A per output
- inrush current from UP (at power up)	0.007 A <sup>2</sup> s
Max. power dissipation within the module	6 W (outputs unloaded)
Weight (without Terminal Unit)	ca. 125 g
Mounting position	horizontal or vertical with derating (output load reduced to 50 % at 40°C per group)
Cooling	The natural convection cooling must not be hindered by cable ducts or other parts in the switch-gear cabinet.

### Input Digitali

Number of channels per module	16
Distribution of the channels into groups	1 group of 16 channels
Terminals of the channels I0 to I7	1.0 to 1.7
Terminals of the channels I8 to I15	2.0 to 2.7
Reference potential for all inputs	terminals 1.9 ..4.9 (minus pole of the process supply voltage, signal name ZP)
Electrical isolation	from the rest of the module (I/O-Bus)
Indication of the input signals	one yellow LED per channel, the LED is ON when the input signal is high (signal 1)



Input type acc. to EN 61131-2	Type 1
Input delay (0->1 or 1->0)	typ. 8 ms, configurable from 0.1 to 32 ms
Input signal voltage	24 V DC
signal 0	-3 V...+5 V
undefined signal	> +5 V...< +15 V
signal 1	+15 V...+30 V
Ripple with signal 0	within -3 V...+5 V
Ripple with signal 1	within +15 V...+30 V
Input current per channel	
input voltage +24 V	typ. 5 mA
input voltage +5 V	> 1 mA
input voltage +15 V	> 5 mA
input voltage +30 V	< 8 mA
Max. cable length	
shielded	1000 m
unshielded	600 m

### Inputs/Outputs digitali configurabili

Ognuno dei canali di I/O è definito come input o output all'interno del programma utente.

Number of channels per module	16 inputs/outputs (with transistors)
Distribution of the channels into groups	1 group of 16 channels
if the channels are used as inputs	
- channels I16...I23	terminals 3.0...3.7
- channels I24...I31	terminals 4.0...4.7
if the channels are used as outputs	
- channels Q16...Q23	terminals 3.0...3.7
- channels Q24...Q31	terminals 4.0...4.7
Indication of the input/output signals	one yellow LED per channel, the LED is ON when the input/output signal is high (signal 1)
Electrical isolation	from the rest of the module



### Inputs/Outputs digitali configurabili se usati come Outputs

Number of channels per module	max. 16 transistor outputs
Reference potential for all outputs	terminals 1.9...4.9 (minus pole of the process supply voltage, signal name ZP)
Common power supply voltage	for all outputs: terminals 1.8 ..4.8 (plus pole of the process supply voltage, signal name UP)
Output voltage for signal 1	UP (-0.8 V)
Output delay (0->1 or 1->0)	on request
Output current	
rated value, per channel	500 mA at UP = 24 V
maximum value (all cha. together)	8 A
Leakage current with signal 0	< 0.5 mA
Rated protection fuse on UP	10 A fast
De-magnetization when inductive loads are switched off	with varistors integrated in the module
Switching frequency	
with resistive load	on request
with inductive loads	max. 0.5 Hz
with lamp loads	max. 11 Hz with max. 5 W
Short-circuit proof / overload proof	yes
Overload message ( $I > 0.7$ A)	yes, after ca. 100 ms
Output current limitation	yes, automatic reactivation after short-circuit/overload
Resistance to feedback against 24V signals	yes
Max. cable length	
shielded	1000 m
unshielded	600 m



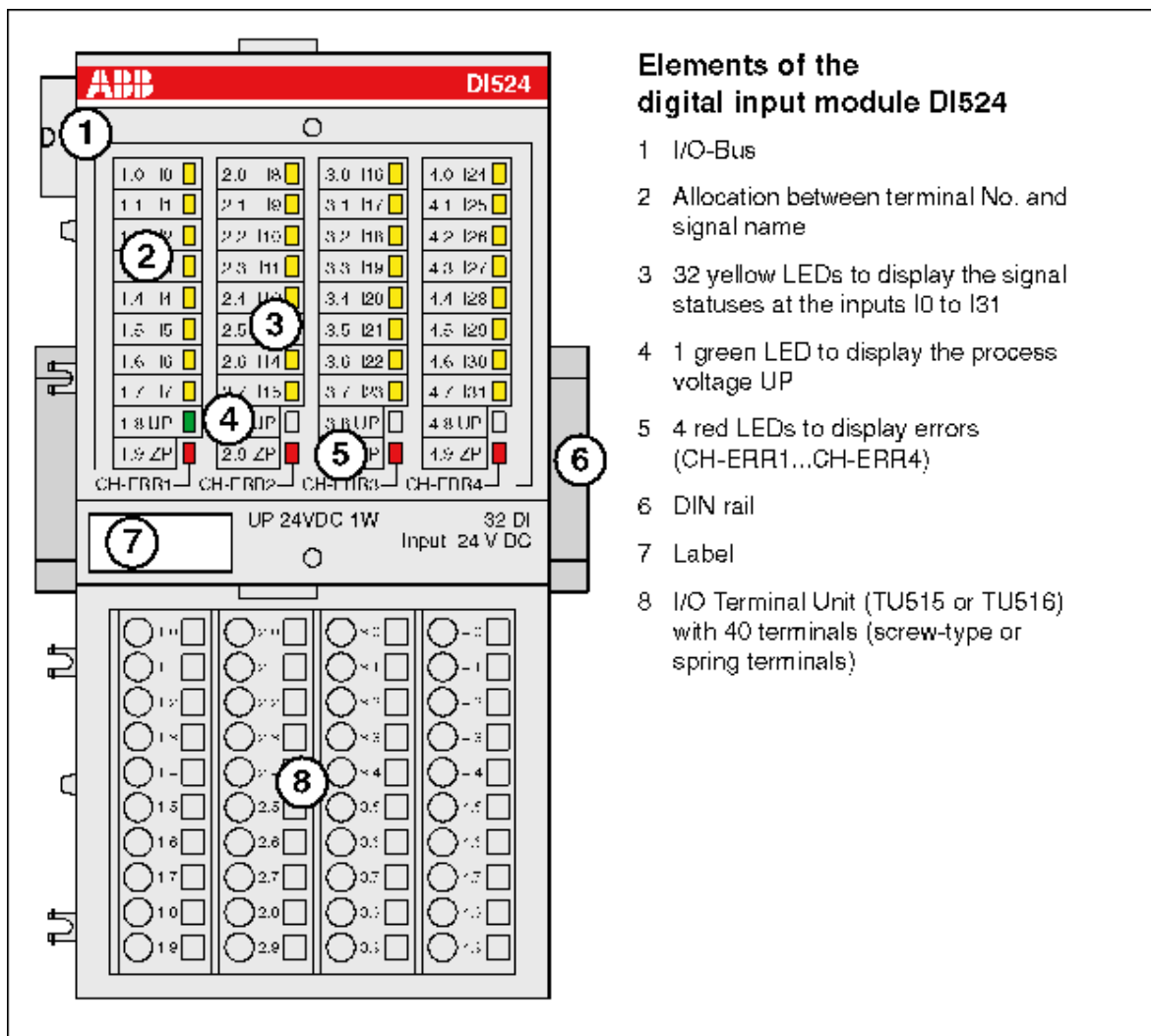
### Inputs/Outputs digitali configurabili se usati come Inputs

Number of channels per module	max. 16 digital inputs
Reference potential for all inputs	terminals 1.9 ..4.9 (minus pole of the process supply voltage, signal name ZP)
Input current, per channel	see "Digital inputs"
Input type acc. to EN 61131-2	Type 1
Input delay (0->1 or 1->0)	typ. 8 ms, configurable from 0.1 to 32 ms
Input signal voltage	24 V DC
Signal 0	-3 V...+5 V *
undefined signal	> +5 V...< +15 V
Signal 1	+15 V...+30 V
Ripple with signal 0	within -3 V...+5 V *
Ripple with signal 1	within +15 V...+30 V
Max. cable length	
shielded	1000 m
unshielded	600 m



## DI 524

32 input digitali 24 V DC



### Funzionalità

Digital inputs	32 (24 V DC)
High-speed counter	integrated, many configurable operating modes (only with AC500)
LED displays	for signal statuses, errors and supply voltage
Internal power supply	through the expansion bus interface (I/O-Bus)
External power supply	via the terminals ZP and UP (process voltage 24 V DC)



### Dati Tecnici Modulo

Process supply voltage UP	
- Connections	Terminals 1.8 - 4.8 for +24 V (UP) and 1.9 - 4.9 for 0 V (ZP)
- Rated value	24 V DC
- max. ripple	5 %
- Protection against reversed voltage	yes
- Rated protection fuse for UP	10 A fast
- Electrical isolation	yes, per module
Current consumption	
- internal (via I/O-Bus)	about 5 mA at 3.3 V DC
- current consumption from UP at normal operation	0.050 A + max. 0.008 A per input
- inrush current from UP (at power up)	0.008 A <sup>2</sup> s
Weight (without Terminal Unit)	ca. 105 g
Mounting position	horizontal or vertical with derating (output load reduced to 50 % at 40°C per group)
Cooling	The natural convection cooling must not be hindered by cable ducts or other parts in the switch-gear cabinet.

### Input Digitali

Number of channels per module	32
Distribution of the chann. into groups	1 group of 32 channels
Terminals of the channels I0 to I7	1.0 to 1.7
Terminals of the channels I8 to I15	2.0 to 2.7
Terminals of the channels I16 to I23	3.0 to 3.7
Terminals of the channels I24 to I31	4.0 to 4.7
Reference potential for all inputs	terminals 1.9 ..4.9 (minus pole of the process supply voltage, signal name ZP)
Electrical isolation	from the rest of the module (I/O-Bus)
Indication of the input signals	one yellow LED per channel, the LED is ON when the input signal is high (signal 1)



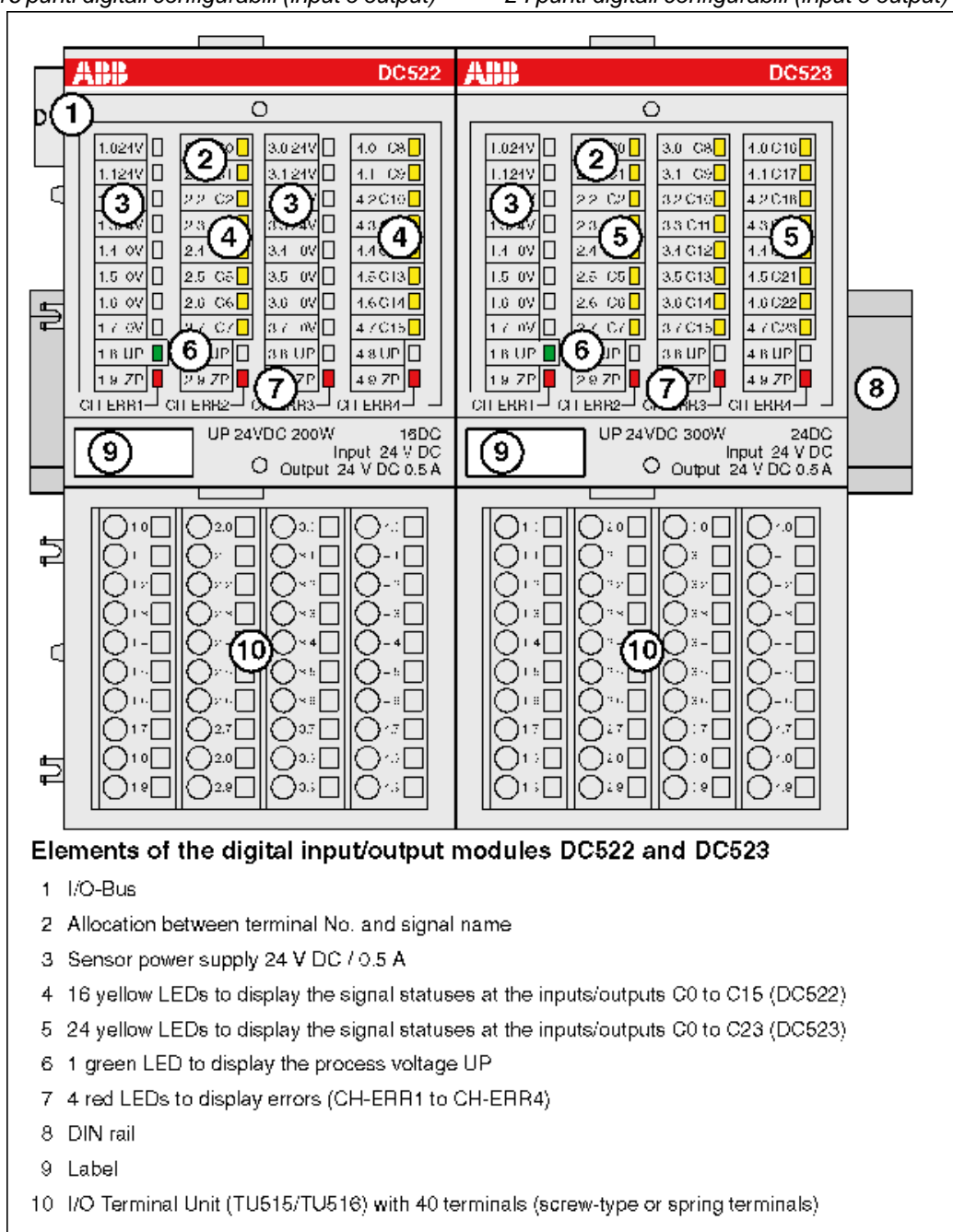
Input type acc. to EN 61131-2	Type 1
Input delay (0->1 or 1->0)	typ. 8 ms, configurable from 0.1 to 32 ms
Input signal voltage	24 V DC
signal 0	-3 V...+5 V
undefined signal	> +5 V...< +15 V
signal 1	+15 V...+30 V
Ripple with signal 0	within -3 V...+5 V
Ripple with signal 1	within +15 V...+30 V
Input current per channel	
input voltage +24 V	typ. 5 mA
input voltage +5 V	> 1 mA
input voltage +15 V	> 5 mA
input voltage +30 V	< 8 mA
Max. cable length	
shielded	1000 m
unshielded	600 m

**DC522**

16 punti digitali configurabili (input o output)

**DC523**

24 punti digitali configurabili (input o output)

**Funzionalità**

Digital inputs/outputs	DC522: 16 (24 V DC)
Digital inputs/outputs	DC523: 24 (24 V DC)
High-speed counter	integrated, many configurable operating modes (only with AC500)
LED displays	for signal statuses, errors and supply voltage
Internal power supply	through the expansion bus interface (I/O-Bus)
External power supply	via the terminals ZP and UP (process voltage 24 V DC)



## Dati Tecnici Modulo

Process supply voltage UP	
- Connections	Terminals 1.8 - 4.8 for +24 V (UP) and 1.9 - 4.9 for 0 V (ZP)
- Rated value	24 V DC
- max. ripple	5 %
- Protection against reversed voltage	yes
- Rated protection fuse on UP	10 A fast
- Electrical isolation	yes, per module
Current consumption	
- internal (via I/O-Bus)	ca. 5 mA at 3.3 V DC
- current consumption from UP at normal operation / with outputs	0.05 A + max. 0.008 A per input + max. 0.5 A per output
- inrush current from UP (at power up)	0.008 A²s
Max. power dissipation within the module	6 W (outputs unloaded)
Sensor power supply	
- Connections DC522	terminals 1.0...1.3 = +24V, 1.4..... = 0 V terminals 3.0...3.3 = +24V, 3.4..... = 0 V
- Connections DC523	terminals 1.0...1.3 = +24V, 1.4..... = 0 V
- Voltage	24 V DC with short-circuit and overload protection
- Loadability	terminals 1.0. 1.3, in total max. 0.5 A terminals 3.0...3.3, in total max. 0.5 A (only DC522)
Weight (without Terminal Unit)	ca. 125 g
Mounting position	horizontal or vertical with derating (output load reduced to 50 % at 40°C per group)
Cooling	The natural convection cooling must not be hindered by cable ducts or other parts in the switch-gear cabinet



### Inputs/Outputs digitali configurabili

Ognuno dei canali di I/O è definito come input o output all'interno del programma utente.

Number of channels per module	DC522: 16 inputs/outputs (with transistors) DC523: 24 inputs/outputs (with transistors)
Distribution of the channels into groups	DC522: 1 group of 16 channels DC523: 1 group of 24 channels
if the channels are used as inputs	
- channels C0...C7	DC522: terminals 2.0...2.7 DC523: terminals 2.0...2.7
- channels C8...C15	DC522: terminals 4.0...4.7 DC523: terminals 3.0...3.7
- channels C16...C23	DC523: terminals 4.0...4.7
if the channels are used as outputs	
- channels C0...C7	DC522: terminals 2.0...2.7 DC523: terminals 2.0...2.7
- channels C8 C15	DC522: terminals 4.0...4.7 DC523: terminals 3.0...3.7
- channels C16...C23	DC523: terminals 4.0...4.7
Indication of the input/output signals	one yellow LED per channel, the LED is ON when the input/output signal is high (signal 1)
Electrical isolation	from the rest of the module

### Inputs/Outputs digitali configurabili se usati come Inputs

Number of channels per module	DC522: max. 16 digital inputs DC523: max. 24 digital inputs
Reference potential for all inputs	terminals 1.9 ..4.9 (minus pole of the process supply voltage, signal name ZP)
Electrical isolation	from the rest of the module
Indication of the input signals	one yellow LED per channel, the LED is ON when the input signal is high (signal 1)
Input type acc. to EN 61131-2	Type 1
Input delay (0->1 or 1->0)	typ. 8 ms, configurable from 0.1 to 32 ms
Input signal voltage	24 V DC
- signal 0	-3 V...+5 V
- undefined signal	> +5 V...< +15 V



- signal 1	+15 V...+30 V
Ripple with signal 0	within -3 V...+5 V
Ripple with signal 1	within +15 V...+30 V
Input current per channel	
- input voltage +24 V	typ. 5 mA
- input voltage +5 V	> 1 mA
- input voltage +15 V	> 5 mA
- input voltage +30 V	< 8 mA
Max. cable length	
shielded	1000 m
unshielded	600 m

#### Inputs/Outputs digitali configurabili se usati come Outputs

Number of channels per module	DC522: max. 16 transistor outputs DC523: max. 24 transistor outputs
Reference potential for all outputs	terminals 1.9...4.9 (minus pole of the process supply voltage, signal name ZP)
Common power supply voltage	for all outputs: terminals 1.8. 4.8 (plus pole of the process supply voltage, signal name UP)
Output voltage for signal 1	UP (-0.8 V)
Output delay (0->1 or 1->0)	on request
Output current	
rated value, per channel	500 mA at UP = 24 V
maximum value (all channels together)	8 A
Leakage current with signal 0	< 0.5 mA
Rated protection fuse on UP	10 A fast
De-magnetization when inductive loads are switched off	with varistors integrated in the module
Switching frequency	
with resistive load	on request
with inductive loads	max. 0.5 Hz
with lamp loads	max. 11 Hz with max. 5 W

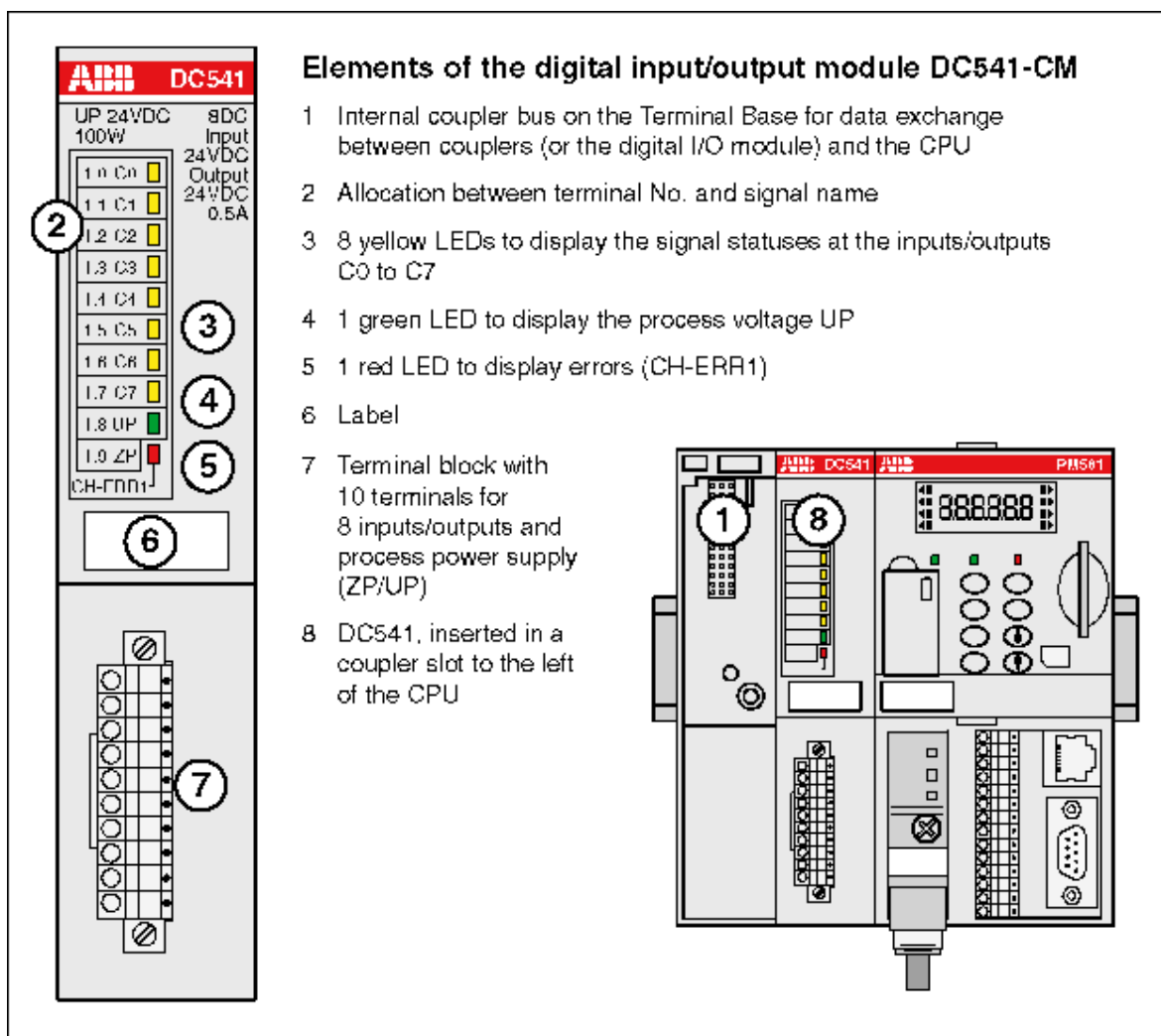


Short-circuit proof / overload proof	yes
Overload message ( $I > 0.7 \text{ A}$ )	yes, after ca. 100 ms
Output current limitation	yes, automatic reactivation after short-circuit/overload
Resistance to feedback against 24V signals	yes
Max. cable length	
shielded	1000 m
unshielded	600 m



## DC 541

8 punti configurabili inseriti all'interno di uno slot per coprocessore



### Funzionalità

Digital inputs/outputs	8 (24 V DC)
High-speed counter	integrated, many configurable operating modes
LED displays	for signal statuses, errors and supply voltage
Internal power supply	through the coupler bus
External power supply	via the terminals ZP and UP (process voltage 24 V DC)



### Dati Tecnici Modulo

Process supply voltage UP	
- Connections	Terminals 1.8 for +24 V (UP) and 1.9 for 0 V (ZP)
- Rated value	24 V DC
- max. ripple	5 %
- Protection against reversed voltage	yes
- Rated protection fuse on UP	10 A fast
- Electrical isolation	yes, per module
Current consumption	
- internal (via coupler bus)	on request
- Current consumption from UP at normal operation / with outputs	on request
- Inrush current from UP (at power up)	on request
Max. power dissipation within the module	6 W (outputs unloaded)
Max. power dissipation within the module	on request
Weight (without terminal block)	ca. 125 g
Mounting position	horizontal or vertical with derating (output load reduced to 50 % at 40°C per group)
Cooling	The natural convection cooling must not be hindered by cable ducts or other parts in the switch-gear cabinet.



### Inputs/Outputs digitali configurabili

Ognuno dei canali di I/O è definito come input o output all'interno del programma utente.

Number of channels per module	8 inputs/outputs (with transistors)
Distribution of the channels into groups	1 group of 8 channels
if the channels are used as inputs	
- channels C0...C7	terminals 1.0...1.7
if the channels are used as outputs	
- channels C0...C7	terminals 1.0...1.7
Reference potential for all inputs/outputs	terminal 1.9 (ZP = Minus pole of the process supply voltage)
Indication of the input/output signals	one yellow LED per channel, the LED is ON when the input/output signal is high (signal 1)
Electrical isolation	from the rest of the module

### Inputs/Outputs digital configurabili usati come inputs

Number of channels per module	max. 8 digital inputs
Reference potential for all inputs	terminal 1.9 (minus pole of the process supply voltage, signal name ZP)
Input current per channel	
- input voltage +24 V	typ. 5 mA
- input voltage +5 V	> 1 mA
- input voltage +15 V	> 5 mA
- input voltage +30 V	< 8 mA
Input type acc. to EN 61131-2	Type 1
Input delay (0->1 or 1->0)	typ. 8 ms, configurable from 0.1 to 32 ms
Input signal voltage	24 V DC
Signal 0	-3 V...+5 V
undefined signal	> +5 V...< +15 V
Signal 1	+15 V...+30 V
Ripple with signal 0	within -3 V...+5 V
Ripple with signal 1	within +15 V...+30 V



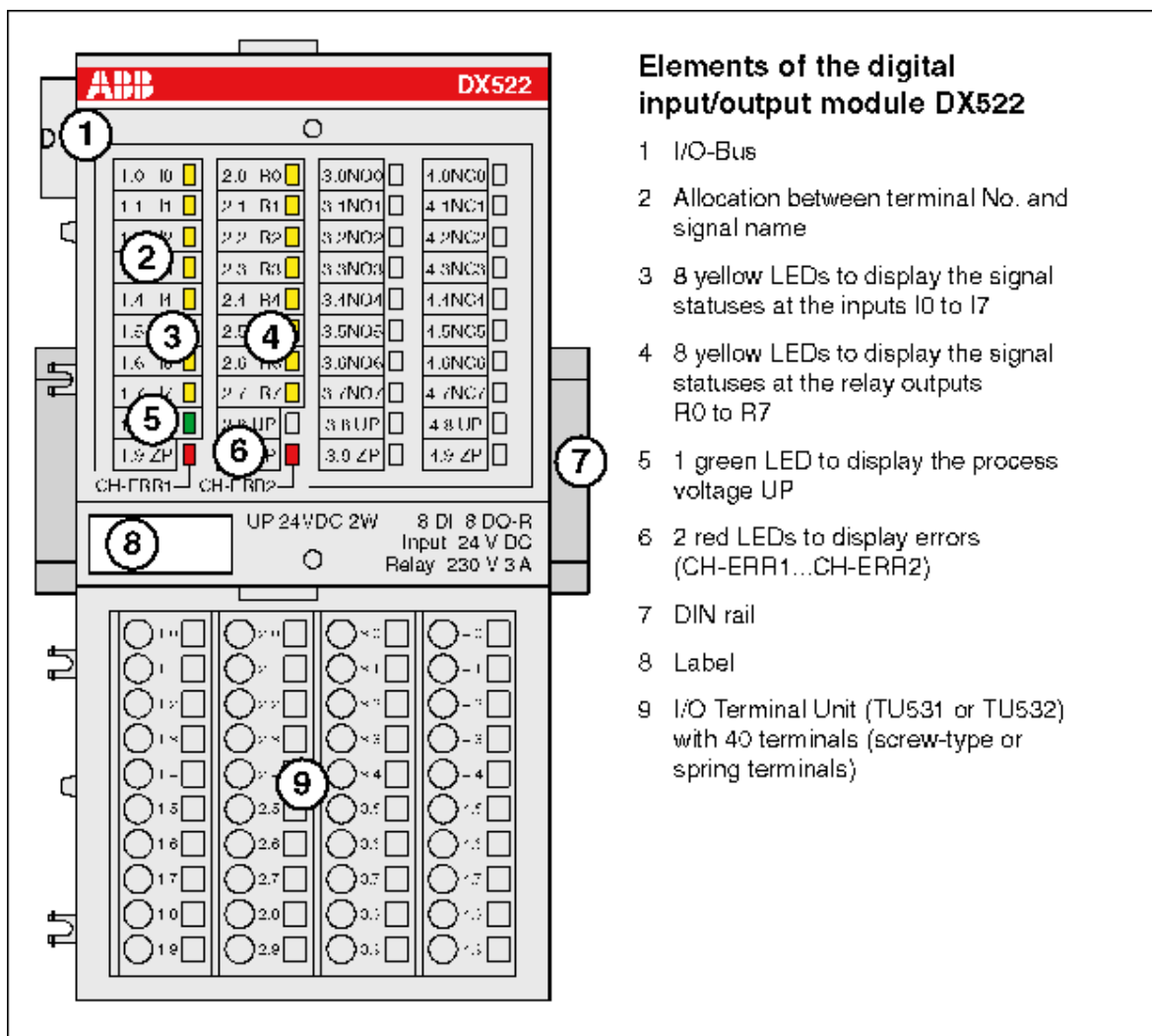
Max. cable length	
shielded	1000 m
unshielded	600 m

#### Inputs/Outputs digital configurabili usati come outputs

Number of channels per module	max. 8 transistor outputs
Common power supply voltage	for all outputs: terminal 1.8 (plus pole of the process supply voltage, signal name UP)
Output voltage for signal 1	UP (-0.8 V)
Output delay (0->1 or 1->0)	typ. 10 $\mu$ s
Output current	
rated value, per channel	500 mA at UP = 24 V
maximum value (all chan. together)	8 A
Leakage current with signal 0	< 0.5 mA
Rated protection fuse for UP	10 A fast
De-magnetization when inductive loads are switched off	with varistors integrated in the module
Switching frequency	
with resistive load	on request
with inductive loads	max. 0.5 Hz
with lamp loads	max. 11 Hz with max. 5 W
Short-circuit proof / overload proof	yes
Overload message ( $I > 0.7$ A)	yes, after ca. 100 ms
Output current limitation	yes, automatic reactivation after short-circuit/overload
Resist to feedback against 24Vsignal	yes
Max. cable length	
shielded	1000 m
unshielded	600 m

## DX 522

8 ingressi digitali 24V DC  
8 uscite a relé 230V AC 3A



### Funzionalità

Digital inputs	8 (24 V DC)
Digital outputs	8 relay outputs with one switch-over contact each
High-speed counter	integrated, many configurable operating modes (only with AC500)
LED displays	for signal statuses, errors and supply voltage
Internal power supply	through the expansion bus interface (I/O-Bus)
External power supply	via the terminals ZP and UP (process voltage 24 V DC)



### Dati Tecnici Modulo

Process supply voltage UP	
- Connections	Terminals 1.8 - 4.8 for +24 V (UP) and 1.9 - 4.9 for 0 V (ZP)
- Rated value	24 V DC
- max. ripple	5 %
- Protection against reversed voltage	yes
Rated protection fuse on UP	10 A fast
- Electrical isolation	yes, per module
Current consumption	
- internal (via I/O-Bus)	ca. 5 mA at 3.3 V DC
- current consumption from UP at normal operation / with outputs	0.05 A + output loads
- inrush current from UP (at power up)	0.010 A <sup>2</sup> s
Max. power dissipation within the module	6 W (outputs OFF)
Weight (without Terminal Unit)	ca. 300 g
Mounting position	horizontal or vertical with derating (output load reduced to 50 % at 40°C per group)
Cooling	The natural convection cooling must not be hindered by cable ducts or other parts in the switch-gear cabinet.



### Input Digitali

Number of channels per module	8
Distribution of the channels into groups	1 group of 8 channels
Terminals of the channels I0 to I7	1.0 to 1.7
Reference potential for all inputs	terminals 1.9.. 4.9 (minus pole of the process supply voltage, signal name ZP)
Electrical isolation	from the rest of the module (I/O-Bus)
Indication of the input signals	one yellow LED per channel, the LED is ON when the input signal is high (signal 1)
Input type acc. to EN 61131-2	Type 1
Input delay (0->1 or 1->0)	typ. 8 ms, configurable from 0.1 to 32 ms
Input signal voltage	24 V DC
signal 0	-3 V...+5 V
undefined signal	> +5 V...< +15 V
signal 1	+15 V...+30 V
Ripple with signal 0	within -3 V...+5 V
Ripple with signal 1	within +15 V...+30 V
Input current per channel	
input voltage +24 V	typ. 5 mA
input voltage +5 V	> 1 mA
input voltage +15 V	> 5 mA
input voltage +30 V	< 8 mA
Max. cable length	
shielded	1000 m
unshielded	600 m



### Uscite a Relé

Number of channels per module	8 relay outputs
Distribution of channels into groups	8 groups of 1 channel each
Connection of the channel R0	terminal 2.0 (common), 3.0 (NO) and 4.0 (NC)
Connection of the channel R1	terminal 2.1 (common), 3.1 (NO) and 4.1 (NC)
:	:
Connection of the channel R6	terminal 2.6 (common), 3.6 (NO) and 4.6 (NC)
Connection of the channel R7	terminal 2.7 (common), 3.7 (NO) and 4.7 (NC)
Electrical isolation	between the channels and from the rest of the module
Indication of the output signals	one yellow LED per channel, the LED is ON when the relay coil is energized
Output delay (0->1 or 1->0)	on request
Relay power supply	by UP process voltage
Relay outputs	
- output short-circuit protection	should be provided externally with a fuse or circuit breaker
- rated protection fuse	6 A gL/gG per channel
Output switching capacity	
- resistive load, max.	3 A; 3 A (230 V AC), 2 A (24 V DC)
- inductive load, max.	1.5 A; 1.5 A (230 V AC), 1.5 A (24 V DC)
- lamp load	60 W (230 V AC), 10 W (24 V DC)
Life time (cycles)	mechanical: 300 000; under load: 300 000 (24 V DC at 2 A), 200 000 (120 V AC at 2 A), 100 000 (230 V AC at 3 A)
Spark suppression with inductive AC load	must be performed externally according to driven load specifications
Demagnetization with inductive DC load	a free-wheeling diode must be circuited in parallel to the inductive load
Switching frequency	
- with resistive load	max. 10 Hz
- with inductive load	max. 2 Hz
- with lamp load	max. xx Hz

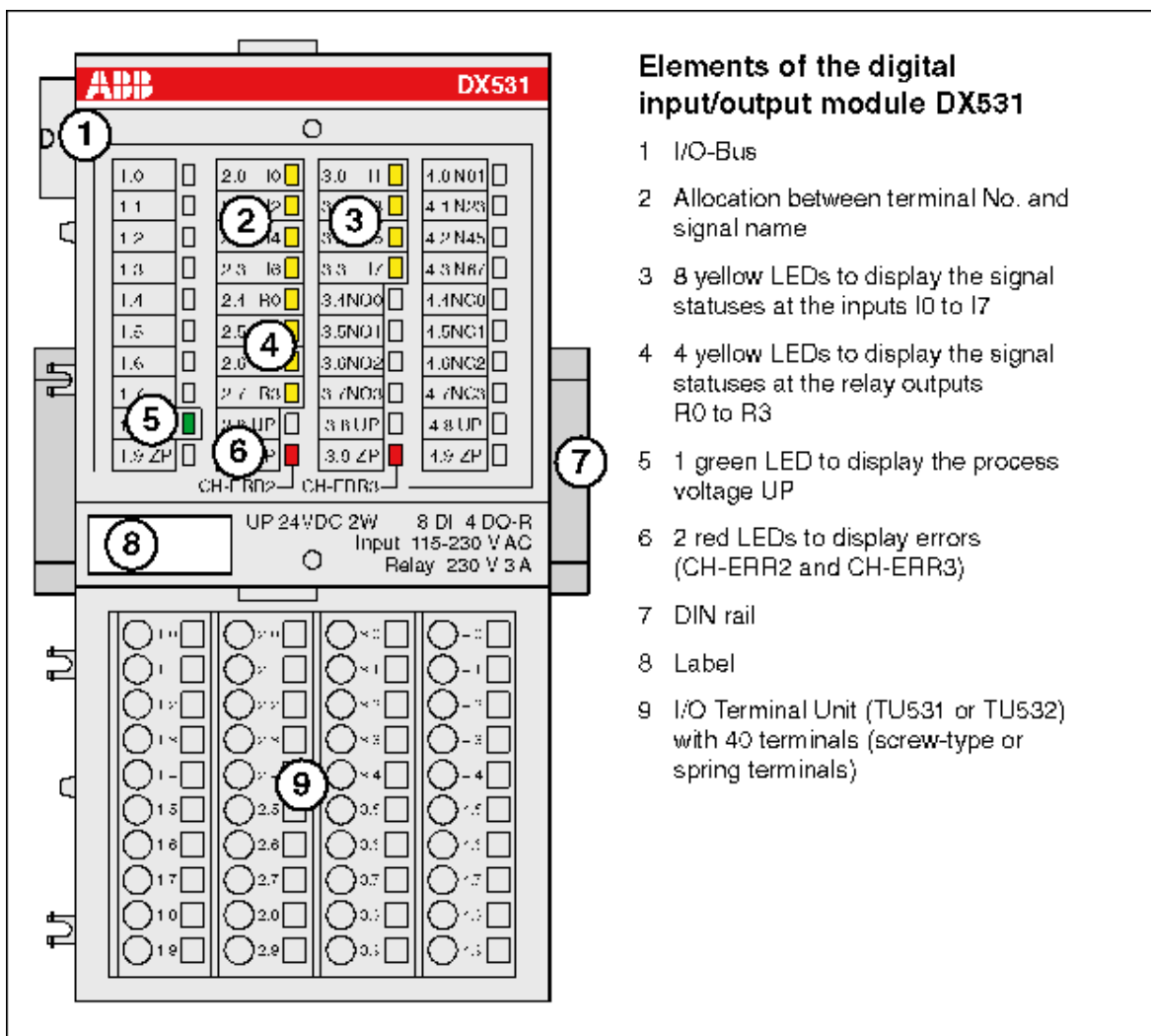




Max. cable length	
- shielded	1000 m
- unshielded	600 m

## DX 531

8 ingressi digitali 24V DC  
4 uscite a relé 230V AC 3A



## Funzionalità

Digital inputs	8 (120 V AC / 230 V AC)
Digital outputs	4 relay outputs with one switch-over contact each
LED displays	for signal statuses, errors and supply voltage
Internal power supply	through the expansion bus interface (I/O-Bus)
External power supply	via the terminals ZP and UP (process voltage 24 V DC)



### Dati Tecnici Modulo

Process supply voltage UP	
- Connections	Terminals 1.8 - 4.8 for +24 V (UP) and 1.9 - 4.9 for 0 V (ZP)
- Rated value	24 V DC
- max. ripple	5 %
- Protection against reversed voltage	yes
- Rated protection fuse on UP	10 A fast
- Electrical isolation	yes, per module
Current consumption	
- internal (via I/O-Bus)	ca. 5 mA at 3.3 V DC
- current consumption from UP at normal operation / with outputs	0.05 A + output loads
- inrush current from UP (at power up)	0.004 A <sup>2</sup> s
Max. power dissipation within the module	6 W (outputs OFF)
Weight (without Terminal Unit)	ca. 300 g
Mounting position	horizontal or vertical with derating (output load reduced to 50 % at 40°C per group)
Cooling	The natural convection cooling must not be hindered by cable ducts or other parts in the switch-gear cabinet.



### Input Digitali

Number of channels per module	8
Distribution of the channels into groups	4 groups of 2 channels each
Terminals of the channels I0 to I7	see figure "Electrical connection"
Electrical isolation	2500 V AC from the rest of the module (I/O-Bus)
Indication of the input signals	one yellow LED per channel, the LED is ON when the input signal is high (signal 1)
Input type acc. to EN 61131-2	Type 2
Input delay (0->1 or 1->0)	typ. 20 ms
Input signal voltage	230 V AC or 120 V AC
Input signal range	0...265 V AC
Input signal frequency	47...63 Hz
Input characteristic	according to EN 61132-2 Type 2
Signal 0	0...40 V AC
undefined signal	> 40 V AC...< 74 V AC
Signal 1	74...265 V AC
Input current per channel	
input voltage = 159 V AC	> 7 mA
input voltage = 40 V AC	< 5 mA
Overvoltage protection	yes
Max. cable length	
shielded	1000 m
unshielded	600 m

### Uscite a Relé

Number of channels per module	4 relay outputs
Distribution of channels into groups	4 groups of 1 channel each
Connection of the four relays	see figure "Electrical connection"
Electrical isolation	between the channels and from the rest of the module
Indication of the output signals	one yellow LED per channel, the LED is ON when the relay



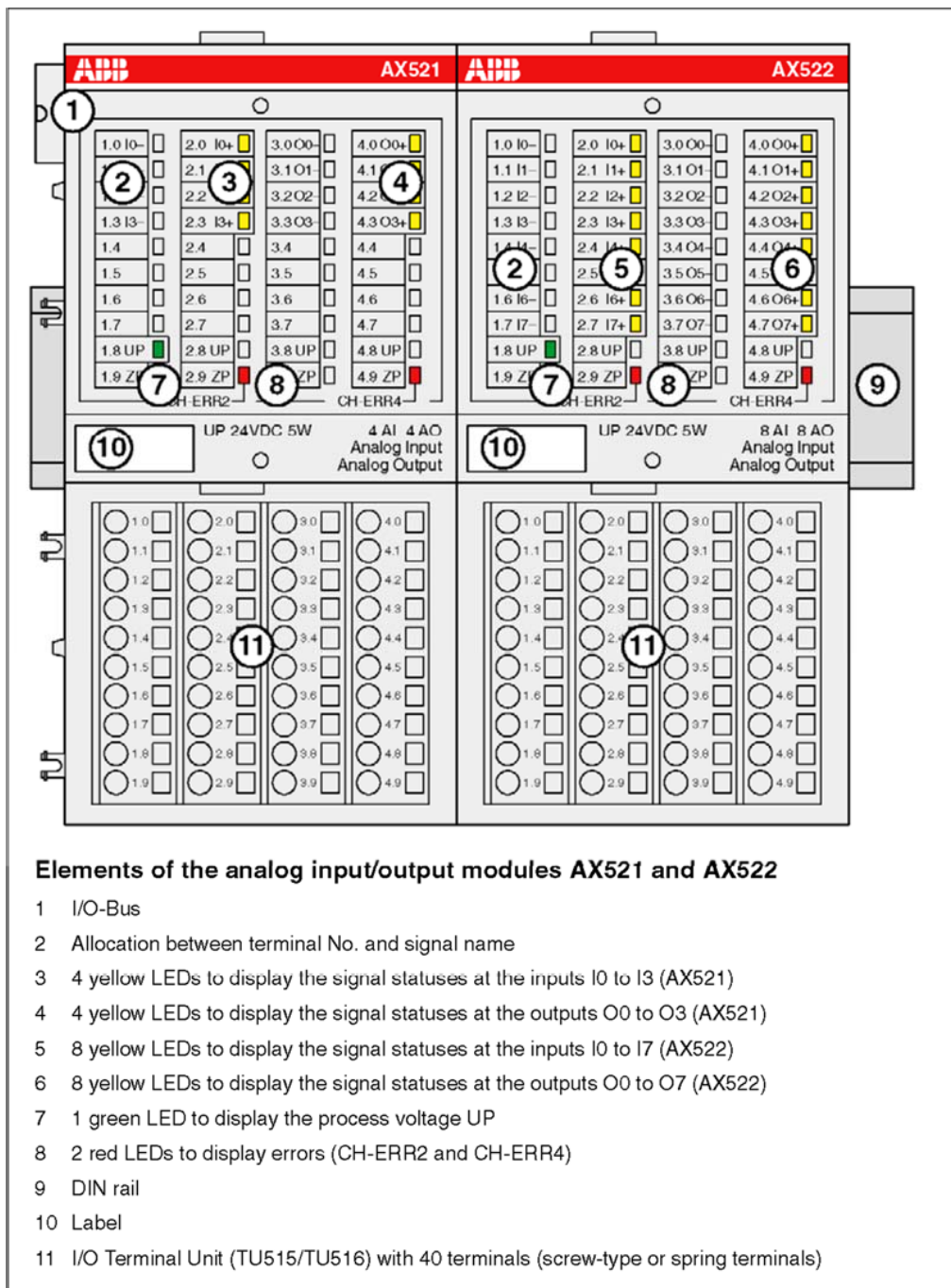
	coil is energized
Output delay (0->1 or 1->0)	on request
Relay power supply	by UP process voltage
Relay outputs	
- output short-circuit protection	should be provided externally with a fuse or circuit breaker
- rated protection fuse	6 A gL/gG per channel
Output switching capacity	
- resistive load, max.	3 A; 3 A (230 V AC), 2 A (24 V DC)
- inductive load, max.	1.5 A; 1.5 A (230 V AC), 1.5 A (24 V DC)
- lamp load	60 W (230 V AC), 10 W (24 V DC)
Life time (cycles)	mechanical: 300 000; under load: 300 000 (24 V DC at 2 A), 200 000 (120 V AC at 2 A), 100 000 (230 V AC at 3 A)
Spark suppression with inductive AC load	must be performed externally according to driven load specifications
Demagnetization with inductive DC load	a free-wheeling diode must be circuited in parallel to the inductive load
Switching frequency	
- with resistive load	max. 10 Hz
- with inductive load	max. 2 Hz
- with lamp load	on request
Max. cable length	
- shielded	1000 m
- unshielded	600 m

## AX521

4 Ingressi Analogici  
4 Uscite Analogiche

## AX522

8 Ingressi Analogici  
8 Uscite Analogiche



<b>AX521: 4 analog inputs, individually configurable for</b>	unused (default setting)
	0...10 V
	-10 V...+10 V
	0...20 mA
	4...20 mA
	Pt100, -50 °C...+400 °C (2-wire)
	Pt100, -50 °C...+400 °C (3-wire), requires 2 channels
	Pt100, -50 °C...+70 °C (2-wire)
	Pt100, -50 °C...+70 °C (3-wire), requires 2 channels
	Pt1000, -50 °C...+400 °C (2-wire)
	Pt1000, -50 °C...+400 °C (3-wire), requires 2 channels
	Ni1000, -50 °C...+150 °C (2-wire)
	Ni1000, -50 °C...+150 °C (3-wire), requires 2 channels
	0...10 V with differential inputs, requires 2 channels
	-10 V...+10 V with differential inputs, requires 2 channels
	digital signals (digital input)
<b>AX521 and AX522: 4 analog outputs, individually configurable for</b>	unused (default setting)
	-10 V...+10 V
	0...20 mA
	4...20 mA
<b>AX522: 4 analog outputs, individually configurable for</b>	unused (default setting)
	-10 V...+10 V
- Voltage -10 V... +10 V	12 bits plus sign
- Voltage 0...10 V	12 bits
- Current 0...20 mA, 4...20 mA	12 bits
- Temperature	0.1 °C
LED displays	AX521: 11 LEDs for signals and error messages AX522: 19 LEDs for signals and error messages
Internal power supply	through the expansion bus interface (I/O-Bus)
External power supply	via the terminals ZP and UP (process voltage 24 V DC)



### Dati Tecnici Modulo

Process voltage	
- Rated value	24 V DC
- max. ripple	5 %
- Protection against reversed voltage	yes
- Rated protection fuse on UP	10 A fast
- Electrical isolation	yes, per module
- Current consumption from UP at normal operation	0.10 A + output loads
- Inrush current from UP (at power up)	0.020 A²s
- Connections	Terminals 1.8 - 4.8 for +24 V (UP) and 1.9 - 4.9 for 0 V (ZP)
Max. length of analog cables, conductor cross section > 0.14 mm²	100 m
Conversion error of the analog values caused by non-linearity, adjustment error at factory and resolution within the normal range	typ. 0.5 %, max. 1 %
Weight	300 g
Mounting position	horizontal or vertical with derating (output load reduced to 50 % at 40°C per group)
Cooling	The natural convection cooling must not be hindered by cable ducts or other parts in the switch-gear cabinet.





### Input Analogici

Number of channels per module	AX521: 4 AX522: 8
Distribution of channels into groups	AX521: 1 group of 4 channels AX522: 1 group of 8 channels
Connections of the channels I0- to I3- Connections of the channels I0- to I7-	AX521: Terminals 1.0 to 1.3 AX522: Terminals 1.0 to 1.7
Connections of the channels I0+ to I3+ Connections of the channels I0+ to I7+	AX521: Terminals 2.0 to 2.3 AX522: Terminals 2.0 to 2.7
Input type	bipolar (not with current or Pt100/Pt1000/Ni1000)
Electrical isolation	against internal supply and other modules
Configurability	0...10 V, -10...+10 V, 0/4...20 mA, Pt100/1000, Ni1000 (each input can be configured individually)
Channel input resistance	Voltage: > 100 k $\Omega$ , current: ca. 330 $\Omega$
Time constant of the input filter	Voltage: 100 $\mu$ s, current: 100 $\mu$ s
Indication of the input signals	one LED per channel
Conversion cycle	2 ms (for 8 inputs + 8 outputs), with Pt/Ni... 1 s
Resolution	Range 0...10 V: 12 bits
	Range -10...+10 V: 12 bits + sign
	Range 0...20 mA: 12 bits
	Range 4...20 mA: 12 bits
Relationship between input signal and hex code	see tables "Input ranges voltage, current and digital input" and "Input ranges resistance"
Unused voltage inputs	are configured as "unused"
Unused current inputs	have a low resistance, can be left open-circuited
Overvoltage protection	yes

### Inputs Analogici utilizzati come Inputs Digitali

Number of channels per module	AX521: max. 4 AX522: max. 8
Distribution of channels into groups	AX521: 1 group of 4 channels AX522: 1 group of 8 channels
Connections of the channels I0+ to I3+ Connections of the channels I0+ to I7+	AX521: Terminals 2.0 to 2.3 AX522: Terminals 2.0 to 2.7



Reference potential for the inputs	Terminals 1.8 to 4.8 (ZP)
Input signal delay	typ. 8 ms, configurable from 0.1 to 32 ms
Indication of the input signals	one LED per channel
Input signal voltage	24 V DC
Signal 0	-30 V...+5 V
Signal 1	+13 V...+30 V

### Outputs Analogici

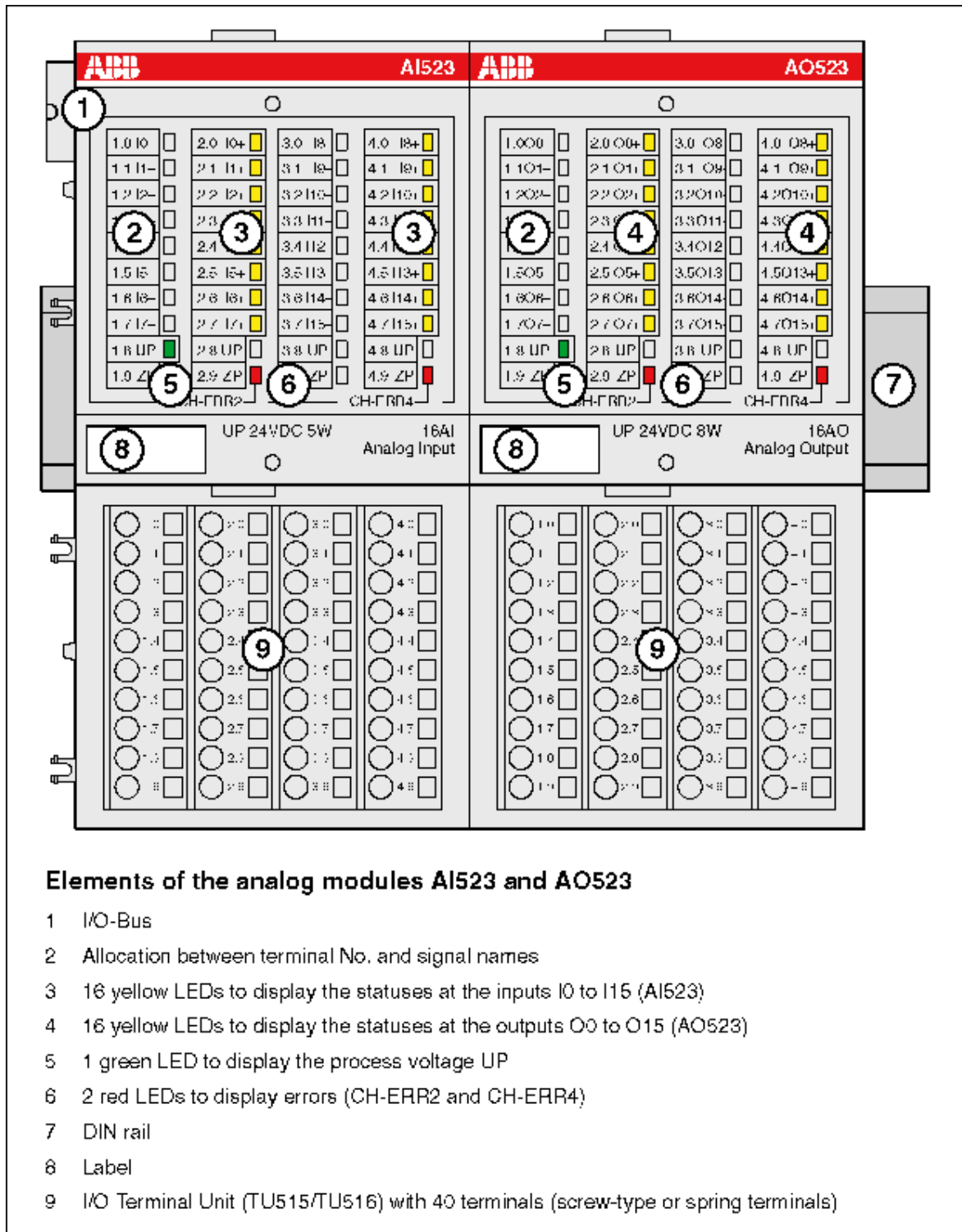
Number of channels per module	AX521: 4, all channels for voltage and current AX522: 8, all channels for voltage, the first 4 channels also for current
Distribution of channels into groups	AX521: 1 group of 4 channels AX522: 1 group of 8 channels
- ChannelsO0-...O3- - ChannelsO0-...O7-	AX521: Terminals 3.0...3.3 AX522: Terminals 3.0...3.7
- ChannelsO0+...O3+ - ChannelsO0+...O7+	AX521: Terminals 4.0...4.3 AX522: Terminals 4.0...4.7
Output type	bipolar with voltage, unipolar with current
Electrical isolation	against internal supply and other modules
Configurability	-10...+10 V, 0...20 mA, 4...20 mA (each output can be configured individually), current outputs only channels 0...3
Output resistance (load), as current output	0...500 $\Omega$
Output loadability, as voltage output	max. $\pm 10$ mA
Indication of the output signals	one LED per channel
Resolution	12 bits (+ sign)
Relationship between output signal and hex code	see table "Output ranges voltage and current"
Unused outputs	can be left open-circuited

## AX521

16 Ingressi Analogici

## AX522

16 Uscite Analogiche



<b>AI523: 16 analog inputs, individually configurable for</b>	unused (default setting)
	0...10 V
	-10 V...+10 V
	0...20 mA
	4...20 mA
	Pt100, -50 °C...+400 °C (2-wire)
	Pt100, -50 °C...+400 °C (3-wire), requires 2 channels
	Pt100, -50 °C...+70 °C (2-wire)
	Pt100, -50 °C...+70 °C (3-wire), requires 2 channels
	Pt1000, -50 °C...+400 °C (2-wire)
	Pt1000, -50 °C...+400 °C (3-wire), requires 2 channels
	Ni1000, -50 °C...+150 °C (2-wire)
	Ni1000, -50 °C...+150 °C (3-wire), requires 2 channels
	0...10 V with differential inputs, requires 2 channels
	-10 V...+10 V with differential inputs, requires 2 channels
	digital signals (digital input)
<b>AO523: 8 analog outputs, individually configurable for</b>	unused (default setting)
	-10 V...+10 V
	0...20 mA
	4...20 mA
<b>AO523: 8 analog outputs, individually configurable</b>	unused (default setting)
	-10 V...+10 V
- Voltage -10 V... +10 V	12 bits plus sign
- Voltage 0...10 V	12 bits
- Current 0...20 mA, 4...20 mA	12 bits
- Temperature	0.1 °C
LED displays	AI523: 19 LEDs for signals and error messages AO523: 19 LEDs for signals and error messages
Internal power supply	through the expansion bus interface (I/O-Bus)
External power supply	via the terminals ZP and UP (process voltage 24 V DC)



### Dati Tecnici Modulo

Process voltage	
- Rated value	24 V DC
- max. ripple	5 %
- Protection against reversed voltage	yes
- Rated protection fuse on UP	10 A fast
- Electrical isolation	yes, per module
- Current consumption from UP at normal operation	0.15 A + output loads (AO523)
- Inrush current from UP (at power up)	0.050 A²s
- Connections	Terminals 1.8 - 4.8 for +24 V (UP) and 1.9 - 4.9 for 0 V (ZP)
Max. length of analog cables, conductor cross section > 0.14 mm²	100 m
Conversion error of the analog values caused by non-linearity, adjustment error at factory and resolution within the normal range	typ. 0.5 %, max. 1 %
Weight	300 g
Mounting position	horizontal or vertical with derating (output load reduced to 50 % at 40°C per group)
Cooling	The natural convection cooling must not be hindered by cable ducts or other parts in the switch-gear cabinet.



### Input Analogici (AI523)

Number of channels per module	16
Distribution of channels into groups	2 groups of 8 channels each
Connections of the channels I0- to I7- Connections of the channels I0+ to I7+	Terminals 1.0 to 1.7 Terminals 2.0 to 2.7
Connections of the channels I8- to I15- Connections of the channels I8+ to I15+	Terminals 3.0 to 3.7 Terminals 4.0 to 4.7
Input type	bipolar (not with current or Pt100/Pt1000/Ni1000)
Electrical isolation	against internal supply and other modules
Configurability	0...10 V, -10...+10 V, 0/4...20 mA, Pt100/1000, Ni1000 (each input can be configured individually)
Channel input resistance	Voltage: > 100 k $\Omega$ , current: ca. 330 $\Omega$
Time constant of the input filter	Voltage: 100 $\mu$ s, current: 100 $\mu$ s
Indication of the input signals	one LED per channel
Conversion cycle	2 ms (for 8 inputs + 8 outputs), with Pt/Ni... 1 s
Resolution	Range 0...10 V: 12 bits
	Range -10...+10 V: 12 bits + sign
	Range 0...20 mA: 12 bits
	Range 4...20 mA: 12 bits
Relationship between input signal and hex code	see tables "Input ranges voltage, current and digital input" and "Input ranges resistance"
Unused voltage inputs	are configured as "unused"
Unused current inputs	have a low resistance, can be left open-circuited
Overvoltage protection	yes

### Input Analogici utilizzati come input digitali (AI523)

Number of channels per module	max. 16
Distribution of channels into groups	2 groups of 8 channels each
Connections of the channels I0+ to I7+ Connections of the channels I8+ to I15+	Terminals 2.0 to 2.7 Terminals 4.0 to 4.7
Reference potential for the inputs	Terminals 1.8 to 4.8 (ZP)
Input signal delay	typ. 8 ms, configurable from 0.1 to 32 ms



Indication of the input signals	one LED per channel
Input signal voltage	24 V DC
Signal 0	-30 V...+5 V
Signal 1	+13 V...+30 V

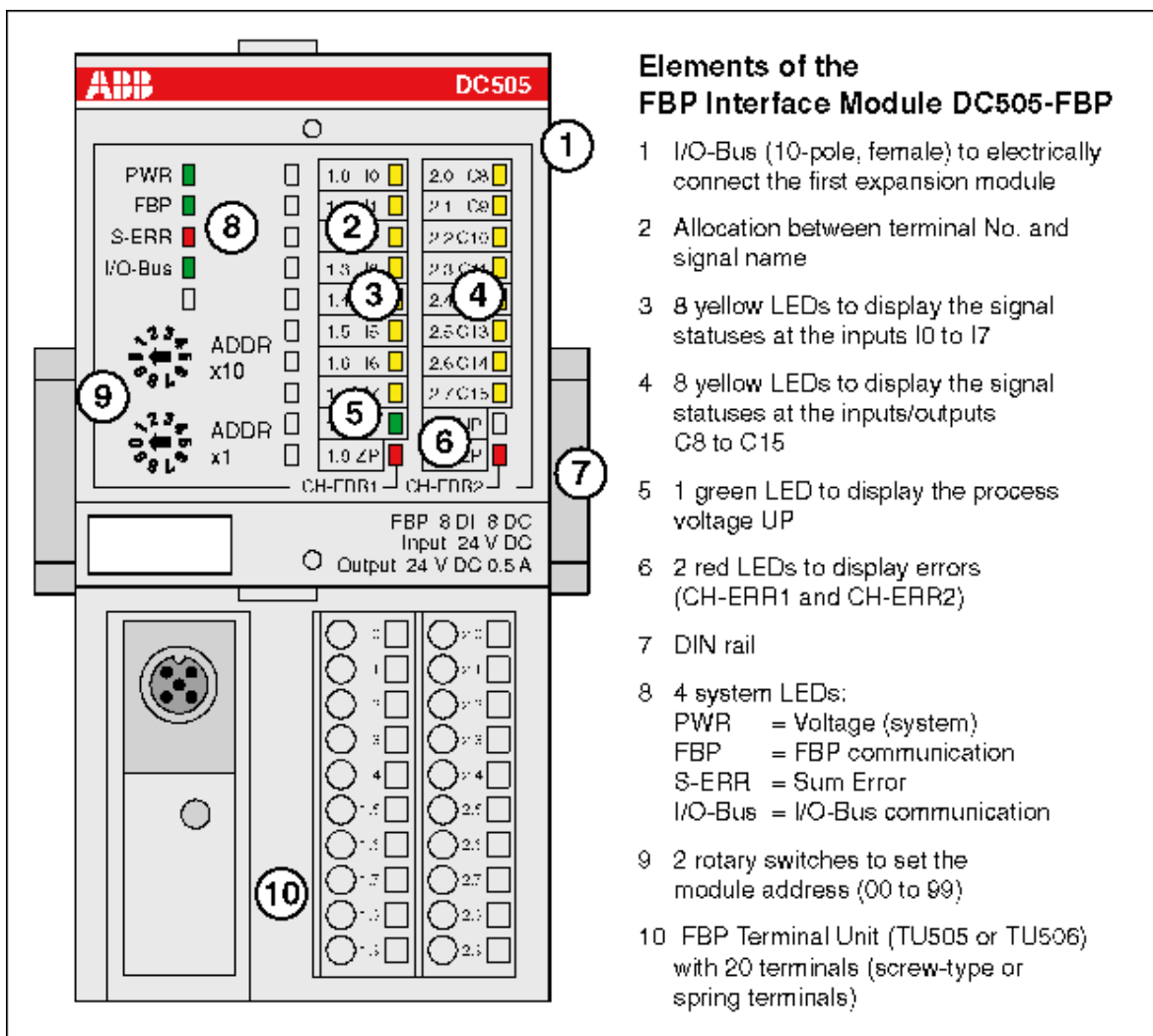
#### Outputs Analogici (AO523)

Number of channels per module	16, of which channels O0...O3 and O8...O11 for voltage and current, and channels O4...7 and O12...15 only for voltage
Distribution of channels into groups	2 groups of 8 channels each
- Channels O0-...O7- - Channels O0+...O7+	Terminals 1.0...1.7 Terminals 2.0...2.7
- Channels O8-...O15- - Channels O8+...O15+	Terminals 3.0...3.7 Terminals 4.0...4.7
Output type	bipolar with voltage, unipolar with current
Electrical isolation	against internal supply and other modules
Configurability	-10...+10 V, 0...20 mA, 4...20 mA (each output can be configured individually), current outputs only channels 0...3
Output resistance (load), as current output	0...500 $\Omega$
Output loadability, as voltage output	max. $\pm 10$ mA
Indication of the output signals	one LED per channel
Resolution	12 bits (+ sign)
Relationship between output signal and hex code	see table "Output ranges voltage and current"
Unused outputs	can be left open-circuited

## DC 505 (Modulo di interfaccia FBP)

8 ingressi digitali 24V DC

8 punti digitali configurabili come ingresso/uscita 24V DC



### Funzionalità

Interface	neutral FieldBusPlug interface
Supply of the module's electronic circuitry	from the FieldBusPlug
Supply of the electronic circuitry of the I/O expansion modules attached	through the expansion bus interface (I/O-Bus)
Address switches	for setting the field bus address (0 to 99)
Digital inputs	8 (24 V DC)
Digital inputs/outputs	8 (24 V DC)
LED displays	system displays, signal statuses, errors and power supply
External supply voltage	via the terminals ZP and UP (process voltage 24 V DC)





### Dati Tecnici Modulo

Rated supply voltage of the module	24 V DC (through the FieldBusPlug)
Current consumption of the module	15 mA (through the FieldBusPlug)
Current consumption from the FBP (at power-up)	on request
Process voltage UP	
- rated value	24 V DC (for inputs and outputs)
- max. current loadability for the supply terminals	10 A
- Protection against reversed voltage	yes
- Rated protection fuse at UP	10 A fast
- Electrical isolation	FBP system bus interface from the rest of the module
-Inrush current from UP( power-up)	0,008 A <sup>2</sup> s
- Current consumption from UP at normal operation / with outputs	0,005 A + 0.5 A per output
- Connections	Terminals 1.8 - 2.8 for +24 V(UP) and 1.9-2.9 for 0V(ZP)
Max. power dissipation within the module	6 W (outputs unloaded)
Number of digital inputs	8
Number of configurable digital inputs/outputs	8
Reference potential for all digital inputs and outputs	Minus pole of the supply voltage, signal name ZP
Address setting	with 2 rotary switches on the front panel
Diagnosis	see chapter "Diagnosis and displays"
Operating and error displays	23 LEDs altogether
Weight (without Terminal Unit)	ca. 125 g
Mounting position	Horizontal or vertical with derating (output load reduced to 50 % at 40°C per group)
Cooling	The natural convection cooling must not be hindered by cable ducts or other parts in the switch-gear cabinet.



### Inputs Digitali

Number of channels per module	8
Distribution of the channels into groups	1 group of 8 channels
Terminals of the channels I0 to I7	1.0 to 1.7
Terminals of the channels C8 to C16	2.0 to 2.7
Reference potential for all inputs	terminals 1.9 ..4.9 (Minus pole of the process supply voltage, signal name ZP)
Electrical isolation	from the FBP system bus
Indication of the input signals	one yellow LED per channel, the LED is ON when the input signal is high (signal 1)
Input type acc. to EN 61131-2	Type 1
Input delay (0->1 or 1-> 0)	typ. 8 ms, configurable from 0.1 to 32 ms
Input signal voltage	24 V DC
Signal 0	-3 V...+5 V
undefined signal	> +5 V...< +15 V
Signal 1	+15 V...+30 V
Ripple with signal 0	within -3 V...+5 V
Ripple with signal 1	within +15 V...+30 V
Input current per channel	
- input voltage +24 V	typ. 5 mA
- input voltage +5 V	> 1 mA
- input voltage +15 V	> 2 mA
- input voltage +30 V	< 8 mA
Max. cable length	
- shielded	1000 m
- unshielded	600 m



### Inputs/Outputs digital configurabili

Ognuno dei canali di I/O è definito come input o output all'interno del programma utente.

Number of channels per module	8 inputs/outputs (with transistors)
Distributen of the channels into groups	1 group of 8 channels
if the channels are used as inputs	
- channels I8...I15	terminals 2.0...2.7
if the channels are used as outputs	
- channels Q8...Q15	terminals 2.0...2.7
Indication of the input/output signals	one yellow LED per channel, the LED is ON when the input/output signal is high (signal 1)
Electrical isolation	from the FBP system bus

### Inputs/Outputs Digitali utilizzati come outputs

Number of channels per module	max. 8 transistor outputs
Reference potential for all outputs	terminals 1.9...2.9 (minus pole of the process supply voltage, signal name ZP)
Common power supply voltage	for all outputs: terminals 1.8.. 2.8 (plus pole of the process supply voltage, signal name UP)
Output voltage for signal 1	UP (-0.8 V)
Output delay (0->1 or 1->0)	on request
Output current	
- rated value, per channel	500 mA at UP = 24 V
- maximum value (all channels together)	10 A
Leakage current with signal 0	< 0.5 mA
Rated protection fuse	10 A fast
De-magnetization when inductive loads are switched off	with varistors integrated in the module
Switching frequency	
- with resistive loads	on request
- with inductive loads	max. 0.5 Hz
- with lamp loads	max. 11 Hz with max. 5 W
Short-circuit proof / overload proof	yes



Overload message ( $I > 0.7 \text{ A}$ )	yes, after ca. 100 ms
Output current limitation	yes, automatic reactivation after short-circuit/overload
Resistance to feedback against 24V signals	yes
Max. cable length	
- shielded	1000 m
- unshielded	

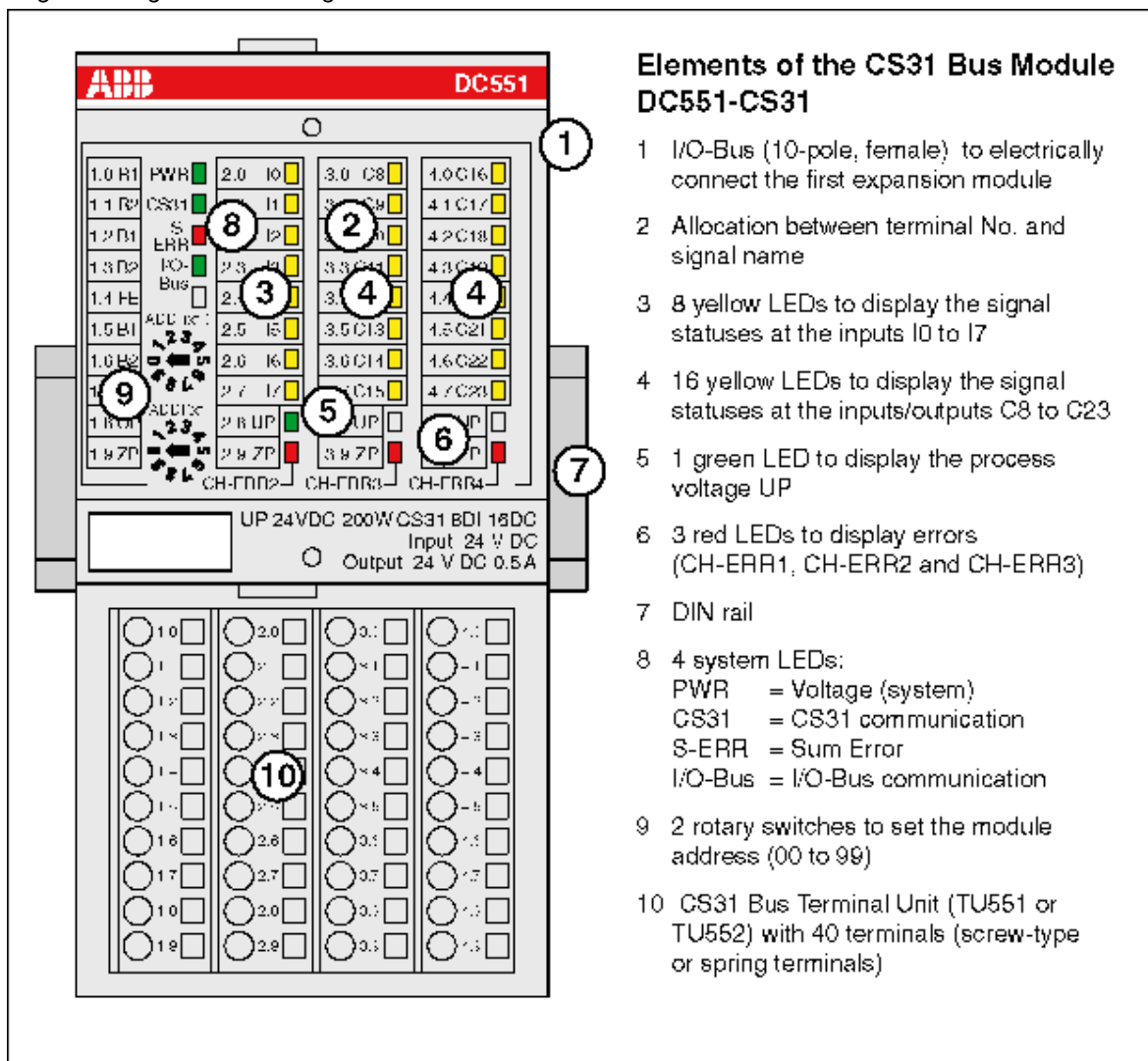
#### Inputs/Outputs Digitali utilizzati come Inputs

Number of channels per module	max. 8 digital inputs
Reference potential for all inputs	terminals 1.9. 2.9 (minus pole of the process supply voltage, signal name ZP)
Input current, per channel	see "Digital inputs"
Input type acc. to EN 61131-2	Type 1
Input delay (0->1 or 1->0)	typ. 8 ms, configurable from 0.1 to 32 ms
Input signal voltage	24 V DC
Signal 0	-3 V...+5 V *
undefined signal	> +5 V...< +15 V
Signal 1	+15 V...+30 V
Ripple with signal 0	within -3 V...+5 V *
Ripple with signal 1	within +15 V...+30 V
Max. cable length	
- shielded	1000 m
- unshielded	600 m

## DC 551 (Modulo di interfaccia per Bus CS31)

8 ingressi digitali 24V DC

16 punti digitali configurabili come ingresso/uscita 24V DC



### Funzionalità

Interface	RS485, CS31 protocol
Supply of module's electronic circuitry	from UP and ZP (power supply)
Supply of the electronic circuitry of the I/O expansion modules attached	through the expansion bus interface (I/O-Bus)
Address switches	for setting the CS31 field bus address (0 to 99)
Digital inputs	8 (24 V DC)
Digital inputs/outputs	16 (24 V DC)
High-speed counter	integrated, many configurable operating modes
LED displays	system displays, signal statuses, errors and power supply
External supply voltage	via the terminals ZP and UP (process voltage 24 V DC)



### Dati Tecnici Modulo

Rated supply voltage of the module	24 V DC (UP/ZP)
Current consumption of the module (UP)	15 mA
Process voltage UP	
- rated value	24 V DC (for inputs and outputs)
- max. current loadability for the supply terminals	10 A
- Protection against reversed voltage	yes
- Rated protection fuse at UP	10 A fast
- Electrical isolation	CS31 bus interface from the rest of the module
- Inrush current from UP (at power-up)	0.040 A <sup>2</sup> s
- Current consumption from UP at normal operation / with outputs	0.1 A + max. 0.008 A per input + max. 0.5 A per output
- Connections	Terminals 1.8 - 4.8 for +24 V (UP) and 1.9 - 4.9 for 0 V (ZP)
Max. power dissipation within the module	6 W (outputs unloaded)
Number of digital inputs	8
Number of configurable digital inputs/outputs	16
Reference potential for all digital inputs and outputs	Minus pole of the supply voltage, signal name ZP
Address setting	with 2 rotary switches on the front panel
Diagnosis	see chapter "Diagnosis and displays"
Operating and error displays	32 LEDs altogether
Weight (without Terminal Unit)	ca. 125 g
Mounting position	horizontal or vertical with derating (output load reduced to 50 % at 40°C per group)
Cooling	The natural convection cooling must not be hindered by cable ducts or other parts in the switch-gear cabinet.



### Inputs Digitali

Number of channels per module	8
Distribution of the channels into groups	1 group of 8 channels
Terminals of the channels I0 to I7	2.0 to 2.7
Terminals of the channels C8 to C23	3.0 to 4.7
Reference potential for all inputs	terminals 1.9 ..4.9 (Minus pole of the process supply voltage, signal name ZP)
Electrical isolation	from the CS31 system bus
Indication of the input signals	one yellow LED per channel, the LED is ON when the input signal is high (signal 1)
Input type acc. to EN 61131-2	Type 1
Input delay (0->1 or 1-> 0)	typ. 8 ms, configurable from 0.1 to 32 ms
Input signal voltage	24 V DC
Signal 0	-3 V...+5 V
undefined signal	> +5 V...< +15 V
Signal 1	+15 V...+30 V
Ripple with signal 0	within -3 V...+5 V
Ripple with signal 1	within +15 V...+30 V
Input current per channel	
- input voltage +24 V	typ. 5 mA
- input voltage +5 V	> 1 mA
- input voltage +15 V	> 2 mA
- input voltage +30 V	< 8 mA
Max. cable length	
- shielded	1000 m
- unshielded	600 m



### Inputs/Outputs digitali configurabili

Ognuno dei canali di I/O è definito come input o output all'interno del programma utente.

Number of channels per module	16 inputs/outputs (with transistors)
Distributen of the channels into groups	1 group of 16 channels
if the channels are used as inputs	
- channels I8...I23	terminals 3.0...4.7
if the channels are used as outputs	
- channels Q8...Q23	terminals 3.0...4.7
Indication of the input/output signals	one yellow LED per channel, the LED is ON when the input/output signal is high (signal 1)
Electrical isolation	from the CS31 system bus

### Inputs/Outputs digitali utilizzati come outputs

Number of channels per module	max. 16 transistor outputs
Reference potential for all outputs	terminals 1.9...4.9 (minus pole of the process supply voltage, signal name ZP)
Common power supply voltage	for all outputs: terminals 1.8 ..4.8 (plus pole of the process supply voltage, signal name UP)
Output voltage for signal 1	UP (-0.8 V)
Output delay (0->1 or 1->0)	on request
Output current	
- rated value, per channel	500 mA at UP = 24 V
- maximum value (all channels together)	10 A
Leakage current with signal 0	< 0.5 mA
Rated protection fuse on UP	10 A fast
De-magnetization when inductive loads are switched off	with varistors integrated in the module
Switching frequency	
- with resistive loads	on request
- with inductive loads	max. 0.5 Hz
- with lamp loads	max. 11 Hz with max. 5 W
Short-circuit proof / overload proof	yes



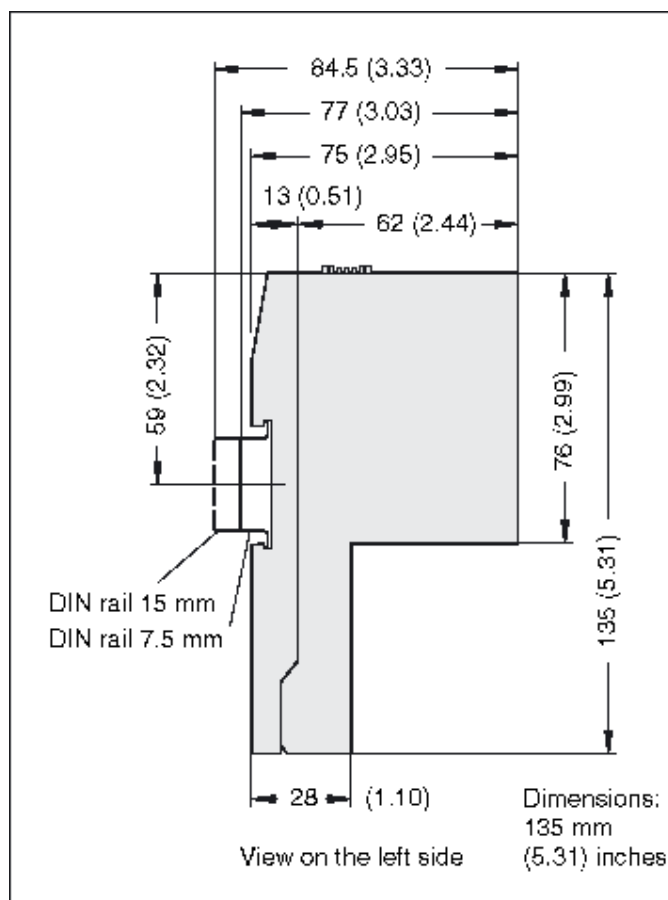


Overload message ( $I > 0.7 \text{ A}$ )	yes, after ca. 100 ms
Output current limitation	yes, automatic reactivation after short-circuit/overload
Resistance to feedback against 24V signals	yes
Max. cable length	
- shielded	1000 m
- unshielded	600 m

#### Inputs/Outputs digitali utilizzati come inputs

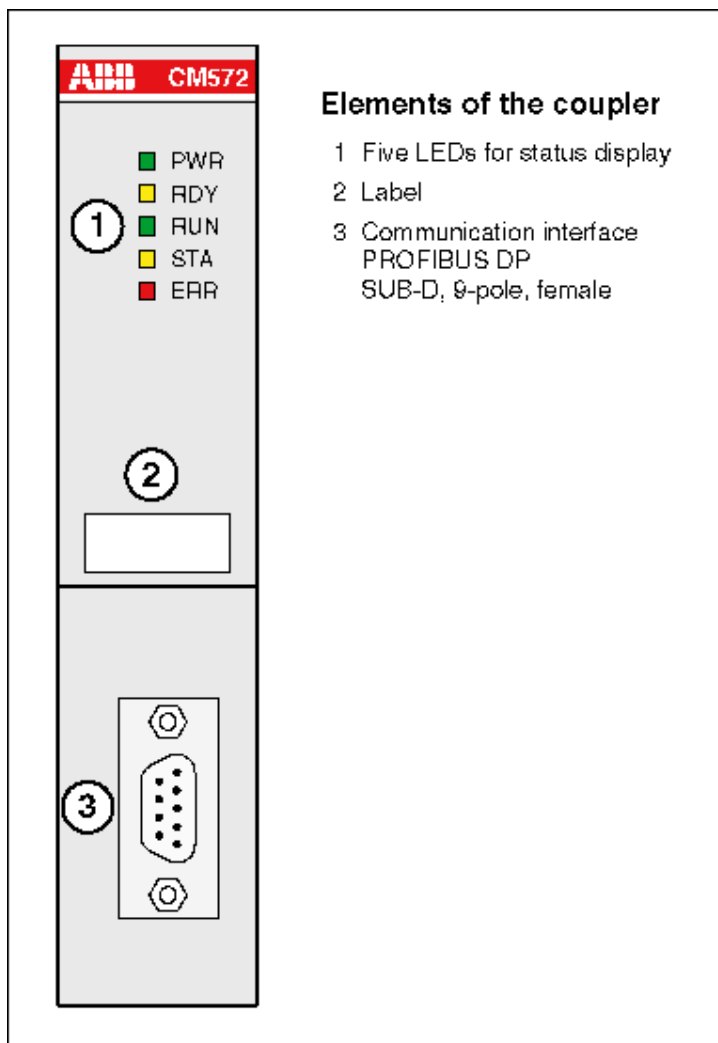
Number of channels per module	max. 16 digital inputs
Reference potential for all inputs	terminals 1.9 ..4.9 (minus pole of the process supply voltage, signal name ZP)
Input current, per channel	see "Digital inputs"
Input type acc. to EN 61131-2	Type 1
Input delay (0->1 or 1->0)	typ. 8 ms, configurable from 0.1 to 32 ms
Input signal voltage	24 V DC
Signal 0	-3 V...+5 V
undefined signal	> +5 V...< +15 V
Signal 1	+15 V...+30 V
Ripple with signal 0	within -3 V...+5 V
Ripple with signal 1	within +15 V...+30 V
Max. cable length	
- shielded	1000 m
- unshielded	600 m

**Base Terminale con Coprocessore vista dal lato sinistro  
(TB511 o TB521 o TB541)**



## CM 572-DP ( Modulo di comunicazione Profibus DP )

Master 12Mbit/s



### Funzionalità

Coupler CM572-DP	
Protocol	PROFIBUS DP Master V0 / V1
Usable CPUs	PM571-xxx, PM581-xxx, PM591-xxx
Usable Terminal Bases	all of the TB5xx
Field bus connector	D-SUB, 9-pole, female
Internal power supply	through the coupler interface of the Terminal Base



### Dati Tecnici Modulo

<b>Coupler CM572-DP</b>	
Field bus	PROFIBUS DP
Transmission rate	9.6 kBit/s to 12 MBit/s
Protocol	PROFIBUS DP Master V0 /V1
Field bus connector	D-SUB, 9-pole, female
Processor	EC1, 160 pins
Clock frequency	48 MHz
Usable CPUs	PM571-xxx, PM581-xxx, PM591-xxx
Usable Terminal Bases	all
Ambient temperature	0 °C...60 °C
Coupler interface	Dual-port memory, 8 kByte
Current consumption over the coupler bus	typ. 330 mA
Internal RAM memory (EC1)	256 kByte
External RAM memory	-
External Flash memory	512 kByte (firmware)
Status display	PWR, RDY, RUN, STA, ERR
Weight	ca. 150 g

### Cavo Bus

Type	twisted pair (shielded)
Characteristic impedance	135...165 $\Omega$
Cable capacity	< 30 pF/m
Conductor diameter of the cores	$\geq 0.64$ mm
Conductor cross section of the cores	$\geq 0.34$ mm <sup>2</sup>
Cable resistance per core	$\leq 55$ $\Omega$ /km
Loop resistance (resistance of two cores)	$\leq 110$ $\Omega$ /km

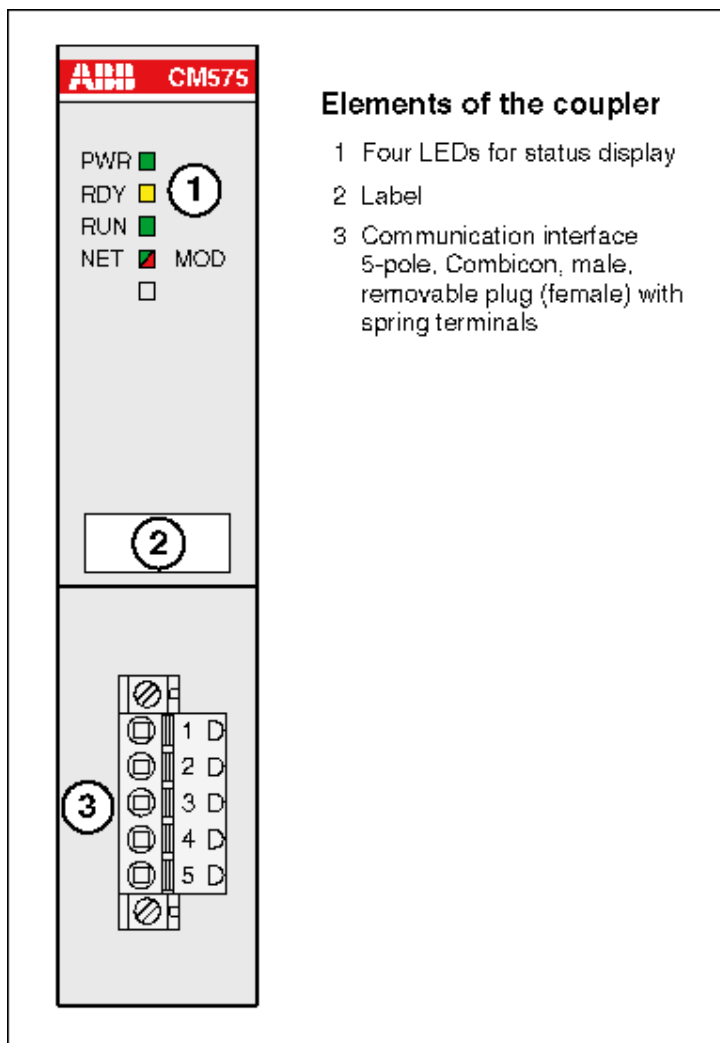


### Lunghezze Cavo Bus

Baud rate	maximum cable length
9.6 kBaud to 187.5 kBaud	1200 m
500 kBaud	400 m
1.5 MBaud	200 m
3 MBaud to 12 MBaud	100 m

## CM 575-DN ( Modulo di comunicazione DeviceNet )

Master 500Kbit/s



### Funzionalità

Coupler CM575-DN	
Protocol	DeviceNet
Usable CPUs	PM571-xxx, PM581-xxx, PM591-xxx
Usable Terminal Bases	all of the TB5xx
Field bus connector	Pluggable connector COMBICON, 5-pole
Internal power supply	via the coupler interface of the Terminal Base



## Dati Tecnici Modulo

<b>Coupler CM575-DN</b>	
Field bus	DeviceNet
Transmission rate	125 kBit/s to 500 kBit/s
Protocol	DeviceNet Master
Field bus connector	Pluggable connector COMBICON, 5-pole
Processor	EC1, 160 pins
Clock frequency	48 MHz
Usable CPUs	PM571-xxx, PM581-xxx, PM591-xxx
Usable Terminal Bases	all
Ambient temperature	0 °C...60 °C
Coupler interface	Dual-port memory, 8 kByte
Current consumption over the coupler bus	typ. 180 mA
Internal RAM memory (EC1)	256 kByte
External RAM memory	-
External Flash memory	512 kByte (firmware)
Status display	PWR, RDY, RUN, NET, MOD
Weight	ca. 150 g

## Cavo Bus

Design characteristics		
Cable type	Thick	Thin
Data/power pair	Data/power	Data/power
Conductor size	18 AWG = 0.823mm <sup>2</sup> 14 AWG = 2.080mm <sup>2</sup>	24 AWG = 0.205mm <sup>2</sup> 22 AWG = 0.324mm <sup>2</sup>
Individual screen	Aluminium/polyester tape	
Drain wire size	18 AWG = 0.823 mm <sup>2</sup>	22 AWG = 0.324 mm <sup>2</sup>
Braided shield	Tin coated annealed copper wires	
Sheath	Oil resistant PVC	



Outer diameter	ca. 12 mm	ca. 7 mm
<b>Electrical characteristics</b>		
Conductor resistance	22.6 $\Omega$ /km 9.1 $\Omega$ /km	91.8 $\Omega$ /km 57.4 $\Omega$ /km
Impedance (@ 1 MHz)	120 $\pm$ 12 $\Omega$	
Attenuation		
At 125 kHz	max. 1.426 dB/100 m	max. 0.951 dB/100 m
At 500 kHz	max. 0.820 dB/100 m	max. 1.64 dB/100 m
At 1 MHz	max. 1.31 dB/100 m	max. 2.29 dB/100 m
Propagation delay	max. 4.4 ns/m	max. 4.4 ns/m

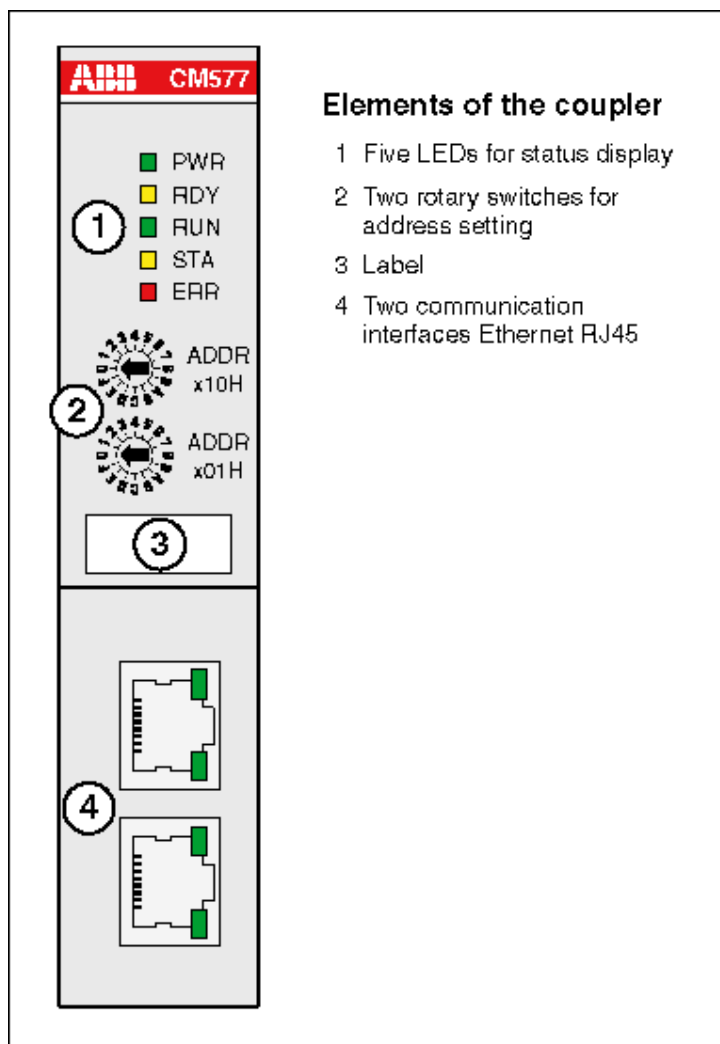
#### Lunghezze Cavo Bus

Network size	125 kbit/s	250 kbit/s	500 kbit/s
Thick trunk length	500 m (1640 ft)	250 m (820 ft)	100 m (328 ft)
Thin trunk length	100 m (328 ft)	100 m (328 ft)	100 m (328 ft)
Flat trunk length	380 m (1250 ft)	200 m (656 ft)	75 m (246 ft)
Maximum drop length	6 m (20 ft)	6 m (20 ft)	6 m (20 ft)
Cumulative drop length	156 m (512 ft)	78 m (256 ft)	39 m (128 ft)



## CM 577-ETH ( Modulo di comunicazione Ethernet )

Switch TCP/IP con due porte integrate



### Funzionalità

Coupler CM577-ETH	
Protocol	Ethernet TCP/IP, UDP/IP, Modbus TCP
Usable CPUs	PM571-xxx, PM581-xxx, PM591-xxx
Usable Terminal Bases	all
Field bus connector	2 x RJ45, with integrated 2-port switch
Internal power supply	via the coupler interface of the Terminal Base

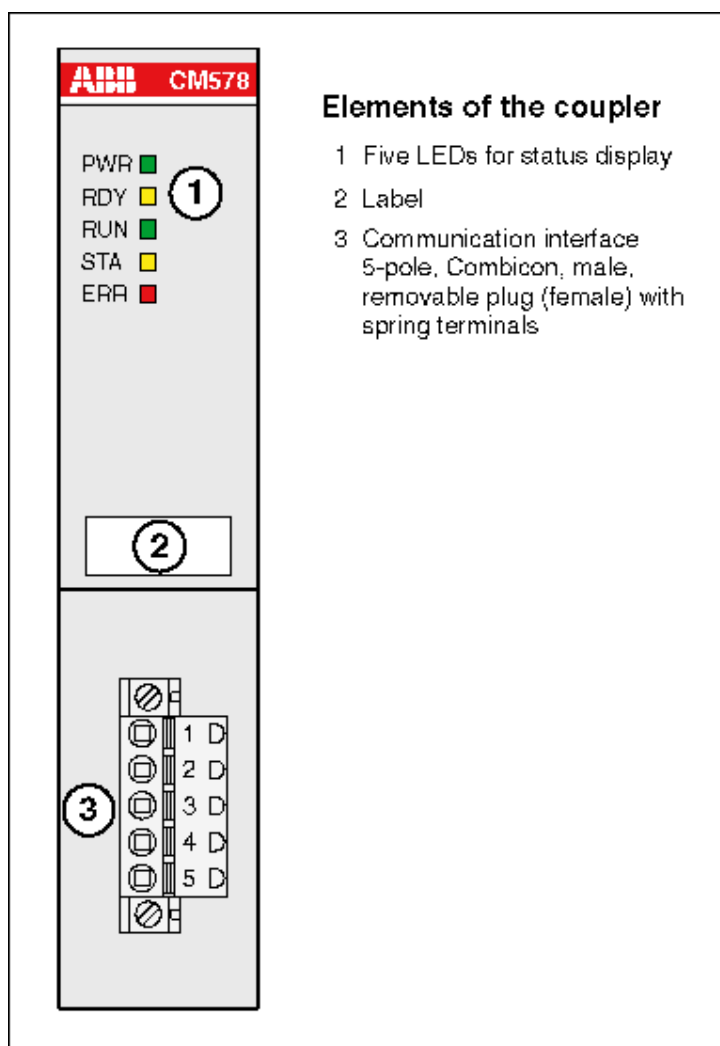


### Dati Tecnici Modulo

<b>Coupler CM577-ETH</b>	
Field bus	2 x Ethernet
Transmission rate	10 MBit/s or 100 MBit/s
Protocol	Ethernet TCP/IP, UDP/IP, Modbus TCP
Field bus connectors	2 x RJ45, with integrated 2-port switch
Processor	EC1, 160 pins
Clock frequency	48 MHz
Usable CPUs	PM571-xxx, PM581-xxx, PM591-xxx
Usable Terminal Bases	all
Ambient temperature	0 °C...60 °C
Coupler interface	Dual-port memory, 8 kByte
Current consumption over the coupler bus	typ. 420 mA
Internal RAM memory (EC1)	256 kByte
External RAM memory	2 x 128 kByte (for webserver option)
External Flash memory	512 kByte (firmware), 2 MByte (for webserver option)
Status display	PWR, RDY, RUN, STA, ERR, 2 x LINK, 2 x ACT
Weight	ca. 150 g

## CM 578-CN ( Modulo di comunicazione CANopen )

Master 1Mbit/s



### Funzionalità

Coupler CM578-CN	
Protocol	CANopen
Usable CPUs	PM571-xxx, PM581-xxx, PM591-xxx
Usable Terminal Bases	all of the TB5xx
Field bus connector	Pluggable connector COMBICON, 5-pole
Internal power supply	via the coupler interface of the Terminal Base



### Dati Tecnici Modulo

<b>Coupler CM578-CN</b>	
Field bus	CANopen
Transmission rate	10 kBit/s to 1 MBit/s
Protocol	CANopen Master
Field bus connector	Pluggable connector COMBICON, 5-pole
Processor	EC1, 160 pins
Clock frequency	48 MHz
Usable CPUs	PM571-xxx, PM581-xxx, PM591-xxx
Usable Terminal Bases	all
Ambient temperature	0 °C...60 °C
Coupler interface	Dual-port memory, 8 kByte
Current consumption over the coupler bus	typ. 290 mA
Internal RAM memory (EC1)	256 kByte
External RAM memory	-
External Flash memory	512 kByte (firmware)
Status display	PWR, RDY, RUN, STA, ERR
Weight	ca. 150 g

### Lunghezza cavoBus

Bit rate (speed)	Bus length
1 Mbit/s	30 m
800 kbit/s	50 m
500 kbit/s	100 m
250 kbit/s	250 m
125 kbit/s	500 m
62.5 kbit/s	1000 m
20 kbit/s	2500 m
10 kbit/s	5000 m

