Spider

Six 1-Wire probes on the RS-485 bus

EN 600 273

Spider is a converter for connecting up to 4 1-Wire probes (max 6 values) or 4 dry contacts to the RS-485 bus. Spider is designed to work with Poseidon 2250.

Input

- 4x 1-Wire probe (temperature or humidity)
  6 values (at most 2 combined temp/humidity probes can be connected)
- 4x dry contact

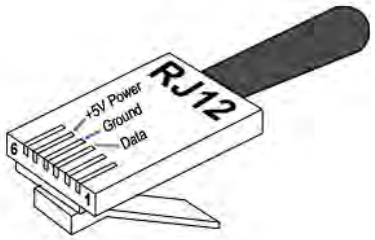
Output

- **RS-485 bus – RJ45** (includes power)
- Poseidon 2250 supports up to 26 probes or **4 Spider units in total**
- An extra power supply adapter is required to connect two or more Spiders
- The RS-485 communication bus can be up to 1200m (4000ft) long
- The last sensor on the RS-485 bus (at the end of the line) must terminate the bus ("Bus Mode" jumpers set to LAST)

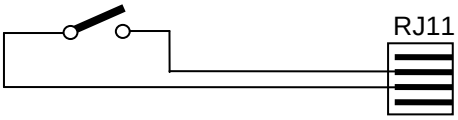
Connectors

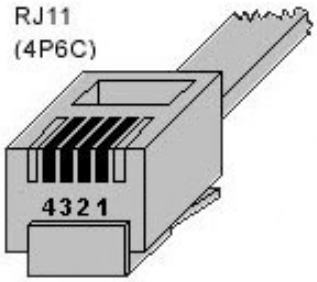
Input

It is possible to use RJ11, RJ12 and RJ45 jacks. Only 1-Wire probes (temp, humidity) by HW group and electrically isolated contacts (relay outputs) are supported.



RJ11	RJ12				
2	**3**	**Data**	<–>	1-Wire Data	**Dry Contact**
3	**4**	**GND**	–––	System Ground	**Dry Contact**
4	**5**	**+5V**	–––	Power Supply	





When a dry contact is connected, set
DIP4 of the "**BUS ADRESS**" switch to "**0**".

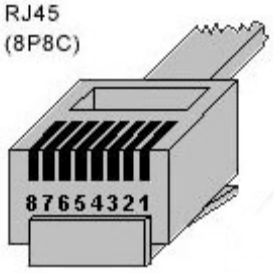
External power

Used to connect external power when daisy-chaining Spider units.
Connects to a 12VDC power supply adapter.

Output

RS-485 bus + 12VDC power

1		Not used
2		Not used
3		485 B return
4	B (-)	RS-485 Industrial bus
5	A (+)	
6		485 A return
7	**GND**	Ground
8	**+12V**	Power



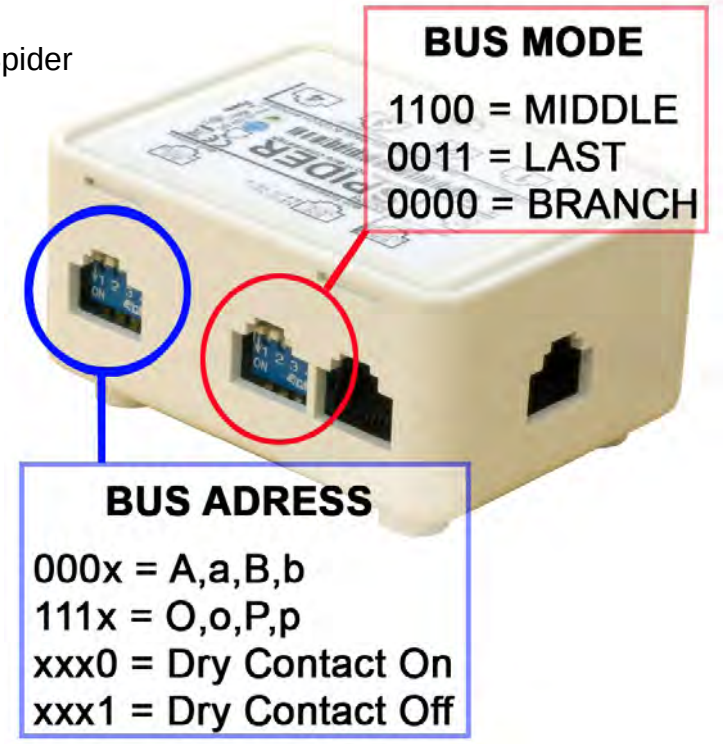
Spider configuration

Bus connection mode (BUS MODE)

The BUS MODE switch defines the position of the Spider on the RS-485 bus.

According to the position, connectors are interconnected and, if necessary, the bus termination enabled. Check this setting against the example block diagram.

Caution: If you change your DIP settings or connect/disconnect probes, power-cycle the Spider to re-scan the probes.

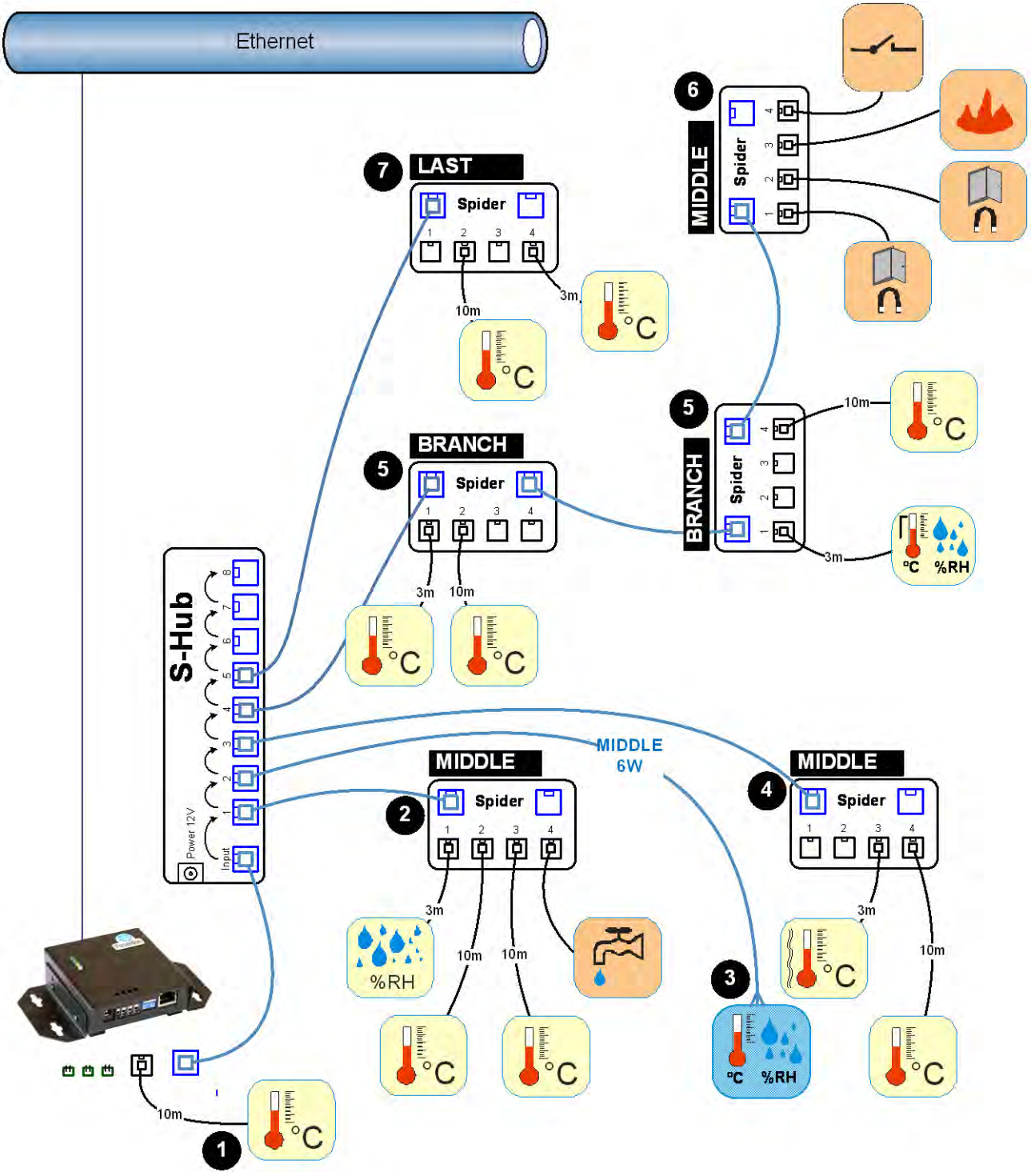


BUS MODE				
RS-485 Bus mode				Mode description
1	2	3	4	
0	0	0	0	**BRANCH – Pass-through portions of a branch** - In the middle of a BRANCH connected to an S-Hub unit - Both RJ45 jacks on the SPIDER unit are connected
1	1	0	0	**MIDDLE – Connected to an S-Hub unit** - One Spider per connector on an S-HUB unit - End of a BRANCH - Only one RJ45 jack on the SPIDER is used
0	0	1	1	**LAST – Last unit on the bus** End of the line, only one RJ45 connector is used

LED indicators

- Each input (I1 through I4) has a corresponding a LED
- The LED briefly flashes when the Poseidon reads the input over RS-485
- For binary inputs, the LED indicates the input state as seen by the Poseidon unit

Note: *Poseidon 2250 supports 4 Spider units only. This is just demonstration drawing.*



Description

1) This Temp-1Wire probe is connected directly to the 1-Wire bus of the Poseidon 2250. All other sensors are connected to the RS-485 bus.
2) This Spider is in the **Middle** mode. Dry contacts are enabled (DIP4=Off) for the flood probe.
3) HTemp-485 sensor, 6-wire connection (both the blue and green pair for RS-485).
4) This spider is in the **Middle** mode. No dry contacts, DIP4 can be On (recommended) or Off.
5) 2x Spider in the **Branch** mode. No dry contacts, DIP4 can be On (recommended) or Off.
6) This Spider is the last one of the Branch = **Middle** mode. DIP4 must be Off.
7) The very last Spider on the RS-485 bus. **LAST** mode, DIP4 can be On (recommended) or Off.

BUS ADDRESS

Defines the address of the Spider unit (lowercase or uppercase letter) on the RS-485 bus.

Caution: ***When the configuration is changed, the Spider must be power-cycled in order to re-scan the sensors. Disconnect the Spider from power (both the external adapter and the RS-485 line powered from the Poseidon) and then reconnected power again.***

BUS ADDRESS									
BUS ADDRESS DIP				**1-Wire sensor / dry contact address**					
1	**2**	**3**	**4**	**1**	**2**	**3**	**4**	**5**	**6**
0	**0**	**0**	-	**A**	**B**	**C**	**D**	**E**	**F**
1	**0**	**0**	-	**G**	**H**	**I**	**J**	**K**	**L**
0	**1**	**0**	-	**M**	**N**	**O**	**P**	**Q**	**R**
1	**1**	**0**	-	**U**	**V**	**W**	**X**	**Y**	**Z**
0	**0**	**1**	-	**a**	**b**	**c**	**d**	**e**	**f**
1	**0**	**1**	-	**g**	**h**	**i**	**j**	**k**	**l**
0	**1**	**1**	-	**m**	**n**	**o**	**p**	**q**	**r**
1	**1**	**1**	-	**u**	**v**	**w**	**x**	**y**	**z**
-	-	-	**0**	Dry Contact**: Yes**					
-	-	-	**1**	Dry Contact: **No**					

- Spider detects 1-Wire probes only when powering up. When no 1-Wire probe is detected at that time at a particular input (1 to 4), Spider acts according to DIP4 setting:
  - 1-Wire probe **not found, DIP4=Off:** Probe assumed to be a dry contact (Switch) [s]
  - 1-Wire probe **not found, DIP4=On:** No probe detected

- Probe and dry contact scan starts at input 1 and ends at input 4.
- Addresses 1–6 are assigned in the order in which the probes are found. Addresses are not bound to input connectors.
  - For example, if a single probe is connected to input 4 (and DIP4=Off), it will get the address shown in column 1.
  - Combined sensors (temperature/humidity with a single RJ11 jack) are assigned two sequential addresses (1+2, 2+3, 3+4 and so on).

Note: *For clarity, we recommend to set DIP4=On at all Spiders with no dry contacts connected. Otherwise, unused inputs are assumed to have Dry Contacts connected to them and are detected as such.*

Communication protocol

The probes work in a request-response mode. Maximum line response time is 50ms.

Communication bus.....RS-485
Address range.....“A” .. “Z” (except for “T”) and “a” ..“z” (25 + 26 addresses)

Communication protocol .....ASCII, described below
Response time .....max. 50 ms per command

Communication speed .....9600 Bd
Data bits.....8
Parity.....none
Stop bits 1

Reading the temperature

Function	Command format	Example
Temperature query	T<addr>I	TAI
Probe response (all is OK)	*<addr><temp><CR>	*A+025.51C
Probe response (error)	*<addr>Err<CR>	*AErr

<addr> is a character from “**A” .. “Z”** , except **“T”**
<CR> is the 0xD or 13 dec character – carriage return
<temp> is the temperature in the *A+025.5C* or *A+025.55C* format

Device identification

Function	Command format	Example
Device type query	T<addr>?	TA?
Probe response (all is OK)	*<addr><identifier><CR>	*ATemp485.A

<identifier> is a string such as “Temp485.A”. The number after the dot indicates the FW revision.