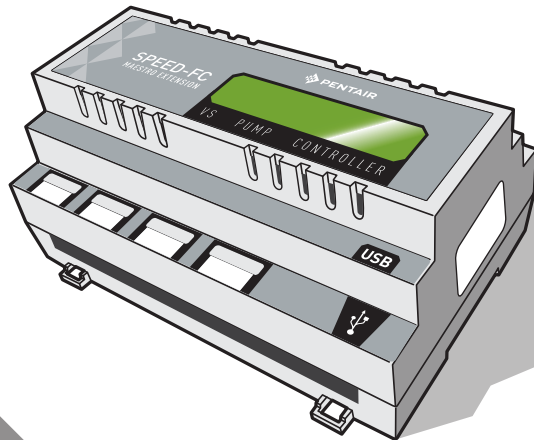


SPEED FC

CONTROL INTERFACE FOR THE VARIABLE SPEED PUMP* FOR MAESTRO

*Compatible for controlling a VS pump (the list of controllable pumps is constantly changing):
- PENTAIR IntelliFlo (via the IntelliComm box)
- PENTAIR Super Flo VS, SPECK EcoTouch, EcoMotion
- HAYWARD VSTD and ZODIAC Flo Pro VS
or an Invertek Drives/Optidrive frequency converter.



SB-PF-INA-003C

INSTALLATION AND USER GUIDE

IMPORTANT SAFETY INSTRUCTIONS,
READ AND FOLLOW ALL OF THE INSTRUCTIONS,
KEEP THESE INSTRUCTIONS



Pentair thanks you for placing your trust in the company and purchasing a Speed FC, the variable speed pump control automaton. Speed FC will make it possible for you to control 3 or 4 different speeds (according to the pump brand) from a MAESTRO.



Declaration of conformity

Directives – Harmonised standards

Pentair International Sarl - Avenue de Sévelin 18 - 1004 Lausanne - Switzerland

We declare, under our own responsibility, that the product meets the directives

SAFETY EN 61010-1:2010
EMC EN 61326-1: EN 301 489-3
EMF EN 62311

SPEED FC (+ PARTS)
SB-PF-INA-003C

PART NUMBERS:
SB-SE-INA-002B

Other normative documents

Authorised person for technical documentation

Pentair International S.a.r.l.
Avenue de Sévelin 18
1004 Lausanne - Switzerland

Lausanne, 01/04/2019

Guillaume Goussé
European Vice President of Operations



Product specifications: SB-PF-INA-003C model

Operating temperature: 0° to 40° C

Maximum operating altitude: 2,000 m

Operating hygrometry: 40% AT 75 °C

Weight (excluding probes): 0.2 kg

Power supply: 24 V ~

Box (internal use): IP 20



Waste treatment of electronic devices at the end of their service life:

The crossed-out bin placed on the main parts which make up the product indicates that it must not be disposed of with household waste. It must be returned to an appropriate collection point for electronic device recycling (information available from the local household waste collection service). This product contains potentially dangerous substances which may have adverse effects on the environment and human health.

Customer Support: PISA, ITALY (8:30 A.M. to 4:30 P.M.) CET

website: www.pentairpooleurope.com

- Warranty (excluding sensors and consumables): 2 years

© 2019 Pentair International LLC, All rights reserved

- The document is subject to change without notice

Trademarks and disclaimers: Pentair® is a registered trademark of Pentair and/or its affiliated companies. Unless indicated otherwise, names and brands of others that may be used in this document are not used to indicate an affiliation or endorsement between the owners of these names and brands and Pentair. Those names and brands may be the trademarks or the registered trademarks of these parties, or others.

IMPORTANT SAFETY GUIDELINES, READ AND FOLLOW ALL OF THE INSTRUCTIONS, KEEP THESE INSTRUCTIONS



GENERAL POINTS

- **DANGER** - INSTALLERS, POOL SPECIALISTS AND OWNERS MUST CAREFULLY READ THESE WARNINGS AND ALL INSTRUCTIONS BEFORE USING THIS PRODUCT.

- **WARNING** - Most countries regulate the construction, installation and operation of public swimming pools and spas, and the construction of residential pools and spas. It is important to comply with these regulations, many of which directly regulate the installation and use of this product. Consult your local building and health codes for more information.

- **CAUTION** - This installation and user guide contains important information on the installation, operation and safety of this product. This guide should be provided to the owner and/or user of this product.

INSTALLATION

- **DANGER** - RISK OF ELECTRIC SHOCK or electrocution

- **BEFORE WORKING ON THIS DEVICE** - Always cut the supply to the device at the circuit-breaker before maintenance. Failure to do this may lead to death or serious injury to service staff, pool users or others, due to an electric shock.

- **DANGER** - SERIOUS BODILY INJURY OR DEATH CAN RESULT IF THIS PRODUCT IS NOT INSTALLED AND USED CORRECTLY.

- **WARNING** - Before installing this product, read and follow the warnings and instructions of this guide. Failing to follow these warnings and instructions may lead to serious injuries, death or material damage. Refer to www.pentairpooleurope.com for more information linked to this product.

- **WARNING** - SPEED FC is installed in an IP65 electrical cabinet, respecting the valid local electrical standards.

- **WARNING** - This product must be installed by an authorised or certified electrician or a qualified swimming pool professional. All of the applicable installation codes and local regulations must also be respected. Poor installation will create an electrical hazard which could result in serious injury or the death of pool users, installers or others due to electric shocks, and may also cause damage to property.

- **DANGER** - DISCONNECT THE SUPPLY CONNECTIONS BEFORE WORKING ON THIS DEVICE; ELECTRICAL POWER MAY BE SUPPLIED TO THE RELAY TERMINALS FROM OTHER SOURCES.

- **WARNING - CHEMICAL BURN HAZARD:** Make sure all pumps are switched off at the main circuit breakers at the domestic distribution board before drilling into any pipes. Set rules for all handling related to electrical aspects, water and chemical products. Group the supply pumps and chemical product tanks in a safe and secured area.

- **WARNING** - Devices which are not intended for use in single-family dwellings may require additional safety equipment to comply with local regulations.

- **WARNING** - Except for remote controls, install components at a minimum of at least 1.5 m (5 feet) from the inside wall of the pool or spa.

- **WARNING** - This product is intended for use in swimming pool applications only.

- **CAUTION** - A sufficient equipotential connection (min. 4.5 mm² recommended), in accordance with local regulations, is obligatory for all metal components of the swimming pool, including the pool pump. This is necessary for the electrical safety as well as reduction of the corrosion risk.

- **DANGER** - SPEED FC does not require a 230 V supply, it is supplied by the RS485 cable connected to the Control Center.

USE

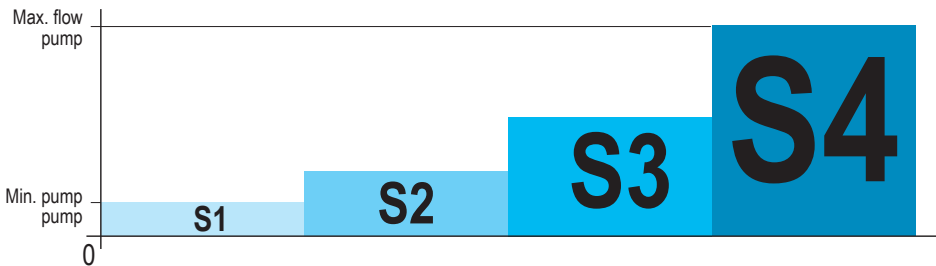
- **DANGER - DO NOT LET CHILDREN OPERATE THIS EQUIPMENT.**

- **WARNING** - Consult the device display daily to ensure there are no alarm messages.

- **WARNING** - To configure the 4X extension, the account needs to be accessed from the Control Center via a computer. Even though settings can be made remotely, checking the settings made on-site is recommended.

Management of options for a VS pump

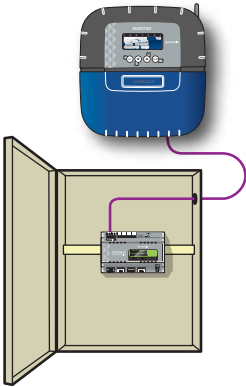
i Speed FC is intended to optimally control (via dry contacts [of which one is shared and one is a controllable speed contact, with maximum four]) the different rotation speeds of a variable speed filtration pump. There are usually 4 speeds: V1, V2, V3, V4. Speed FC makes it possible to launch up to 3 pieces of equipment, whose operation is linked to a speed. The rotation speeds at different speeds are directly pre-set on the control unit (drive) of the pump. Speed FC will therefore select the most appropriate power according to the requirements to save as much electricity as possible without impairing the filtration quality.



- **Speed 1:** Permits minimal circulation. Speed V1 is used for frost protection and is selected when the cover is placed over the pool (if applicable). V1 will function 24h/day if the water $T^{\circ} > +28.0^{\circ}\text{C}$. This speed is therefore used when there are no bathers in the pool.
- **Speed 2:** Permits circulation of a larger amount of water when the cover is stowed (if relevant). This speed is used when there are no bathers in the pool.
- **Speed 3:** Permits a strong flow of water when an accessory requires it. It is often chosen for a counter-current jet, heating, cascade, etc. It is triggered in accordance with the parameters, either by a timer or a wired remote control.
- **Speed 4:** Only used for backwashing of the filter. On some pumps, V4 cannot be adjusted and automatically represents the maximum power.

i Consumption is roughly speed squared, so when the rotation regime is divided by 2, the electricity consumption of a pump is divided by 4! The average saving of SPEED FC running a VS pump compared to classic filtration of 1.5 cv is €450 per year (ERDF base rate in 2015).

-  - The RS-485 connection, which links the device from the Control Center, must remain within the building.



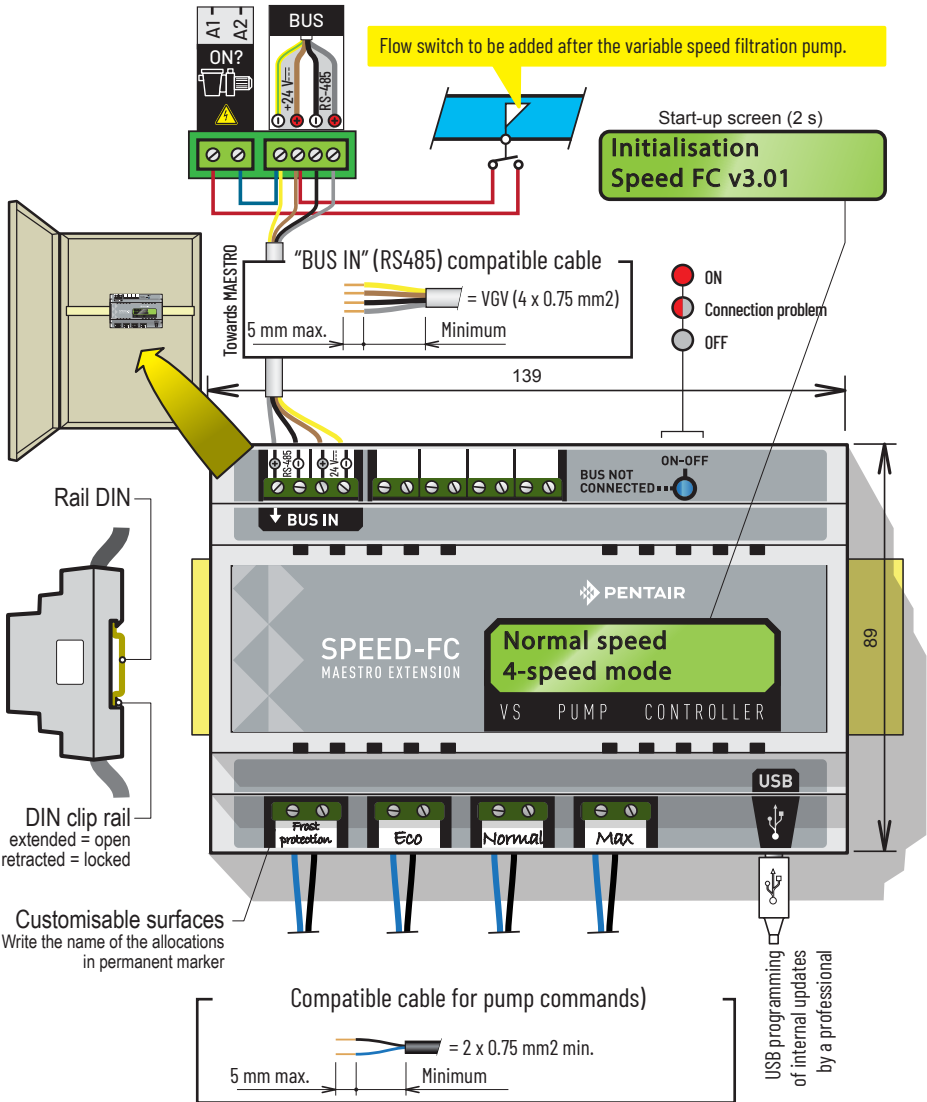
During initial start-up:

- If the Control Center is already operational, the Speed FC light may flash for up to 15 minutes (max.) before lighting continuously.
- If the Control Center is stopped then re-started, the Speed FC light flashes for 30 minutes (max.) before lighting continuously.
- If the Speed FC light flashes for more than 15 minutes, check the power supply of the Control Center and the connections of the RS485 cable.

Installation and connections



- The device is placed within an IP65 electric cabinet on a DIN rail.
- The device must be installed by a qualified technician according to valid local regulation
- This device is permanently connected.
- Each outlet has a dry contact which is normally open for a maximum voltage of 24 V.
- The device does not supply any voltage on the outlets (dry contacts).



PENTAIR IntelliFlo - connections and functions

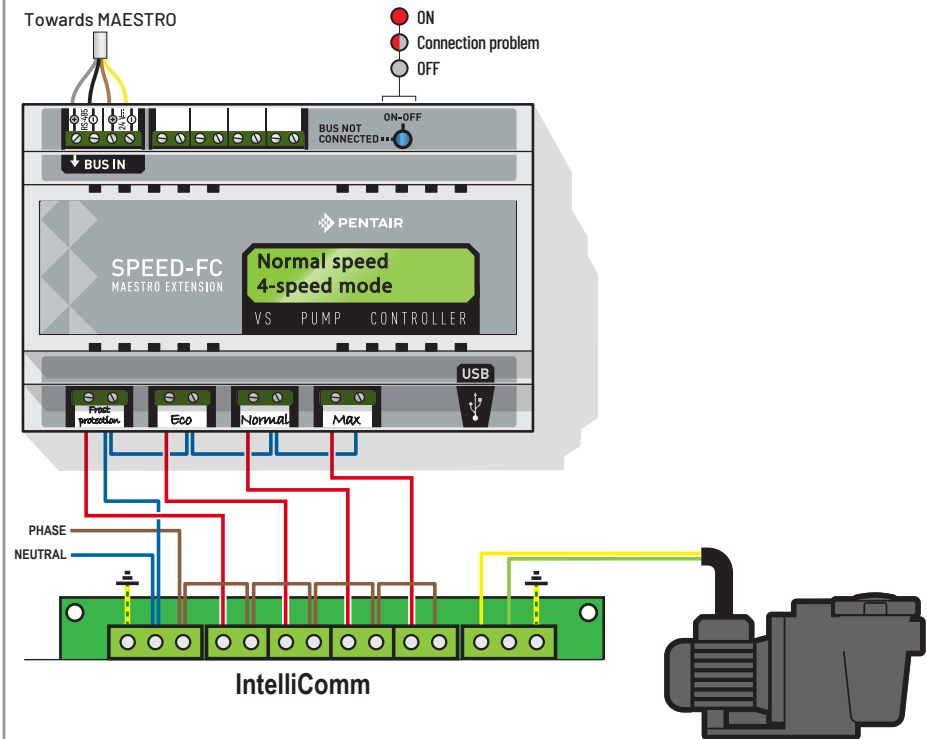
- i** Fix the appropriate speeds [Speed 1 (anti freezing), Speed 2 (Eco), Speed 3 (Normal) and Speed 4 (Max)] on the drive. The drive is the black housing directly on the pump.

IN bridging connections:

- **Not connected:** For use of the PENTAIR IntelliFlo pump and IntelliCom box.

Connections on the 4 "speed" connectors/PENTAIR IntelliFlo and IntelliCom installation:

- **Anti-freezing:** Outlet used to trigger filtering for a water temperature $+3\text{ }^{\circ}\text{C}$ (modifiable)
- **Eco speed:** Speed used when no pre-selected event (see the menu concerned) is active.
- **Normal speed:** Speed used for the requirements of a pre-selected event (see the menu concerned).
- **Maximum speed:** Speed used for backwashing or a "shock" treatment (24h of filtration and electrolyser).



SPECK Eco Touch - connections and functions

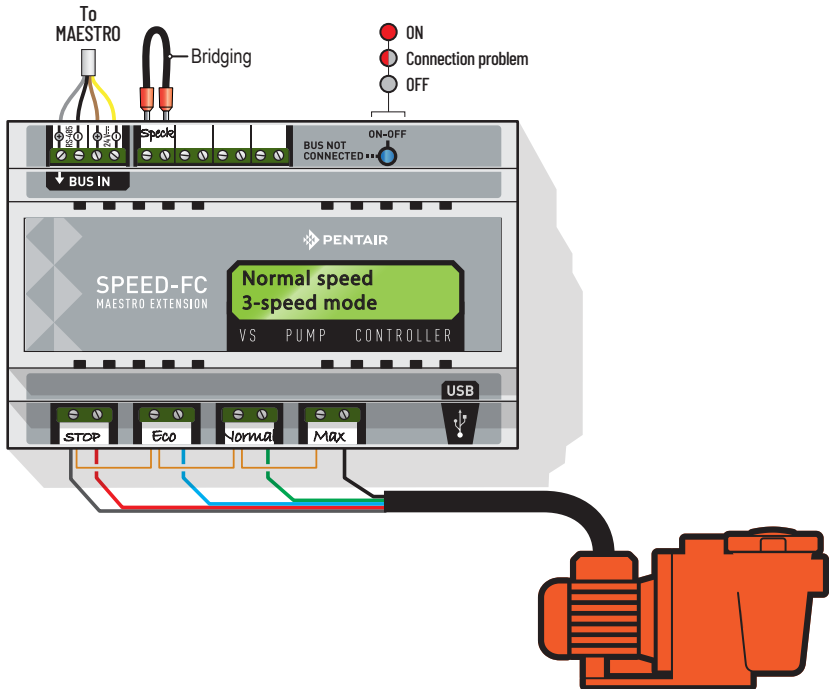
- i** Control the appropriate speeds for the Speck pump, 1 (Eco), 2 (Normal) and 3 (Max).
 - The SPECK Eco Touch pump functions for 5 minutes at maximum speed after starting.

INI bridging connections:

- **Connected:** For use of the SPECK Eco Touch pump.

Possible connections on the 4 "speed" connectors/SPECK Eco Touch installation:

- **STOP:** Outlet used to stop the SPECK pump:
- **Eco speed:** Speed used for filtration when pool use is low or at mid-season. This speed is also used by MAESTRO for anti-freezing.
- **Normal speed:** Speed used for filtration when the pool is used or in the hot season.
- **Maximum speed:** Speed used for backwashing.



SPECK 90 Eco Motion: connections and functions

i On the pump, set:

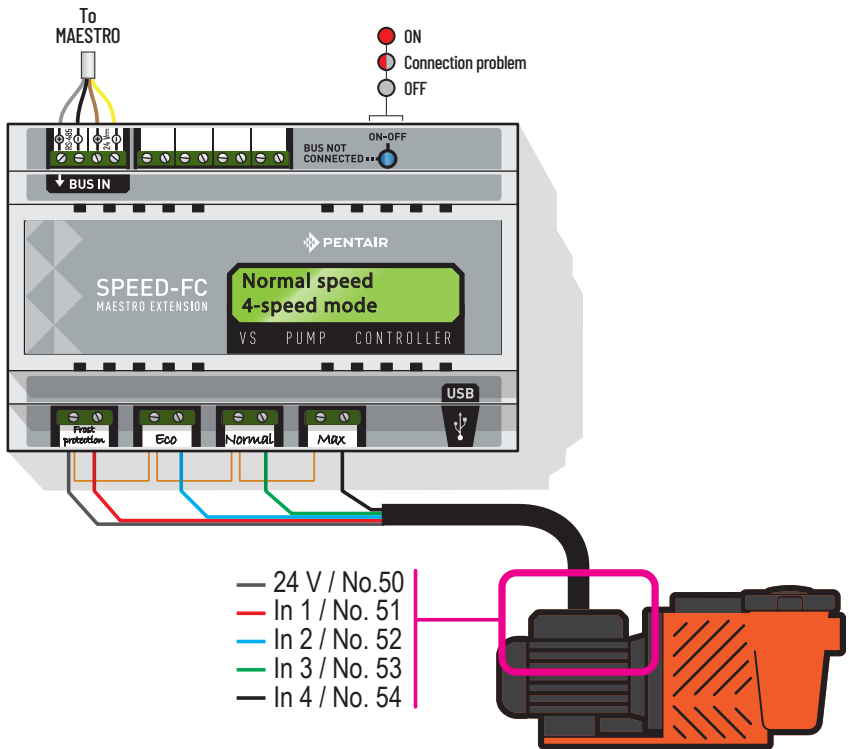
- The speeds $N1 < N2 < N3 < N4$ and $N4$ to 100%
- "EXTERNAL = FIXED NUMERICAL SPEEDS" and "SIGNAL = CONTINUOUS".
- The pump functions for 5 minutes at maximum speed after starting.

IN bridging connections:

- Not connected: For use of the SPECK Eco Motion pump.

Possible connections on the 4 "speed" connectors/SPECK 90 EcoMotion installation:

- Anti-freezing: Outlet used to trigger filtering for a water temperature $+3\text{ }^{\circ}\text{C}$ (modifiable)
- Eco speed: Speed used for filtration when pool use is low or in mid-season.
- Normal speed: Speed used for filtration when the pool is used or in the hot season.
- Maximum speed: Speed used for backwashing.



PENTAIR SuperFlo VS - connections and functions

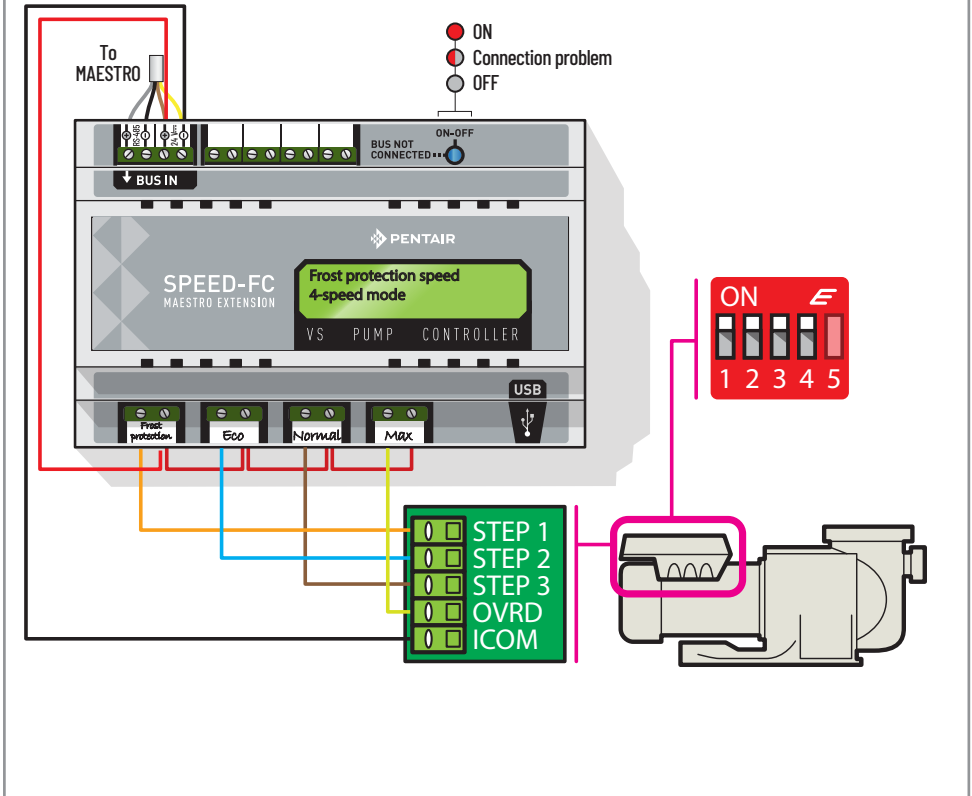
- i** Control the speeds $S1 < S2 < S3 < S4$ and $S4$ at 100% on the pump drive.
Set the DIP switches 1, 2, 3, 4 on the pump drive to ON.

IN bridging connections:

- Not connected: For use of the PENTAIR SuperFlo pump

Connections on the 4 "speed" connectors/PENTAIR SuperFlo installation:

- Anti-freezing: Outlet used to trigger filtering for a water temperature $+3\text{ }^{\circ}\text{C}$ (modifiable)
- Eco speed: Speed used when no pre-selected event (see the menu concerned) is active.
- Normal speed: Speed used for the requirements of a pre-selected event (see the menu concerned).
- Maximum speed: Speed used for backwashing or a "shock" treatment (24h of filtration and electrolyser).



HAYWARD VSTD - connections and functions

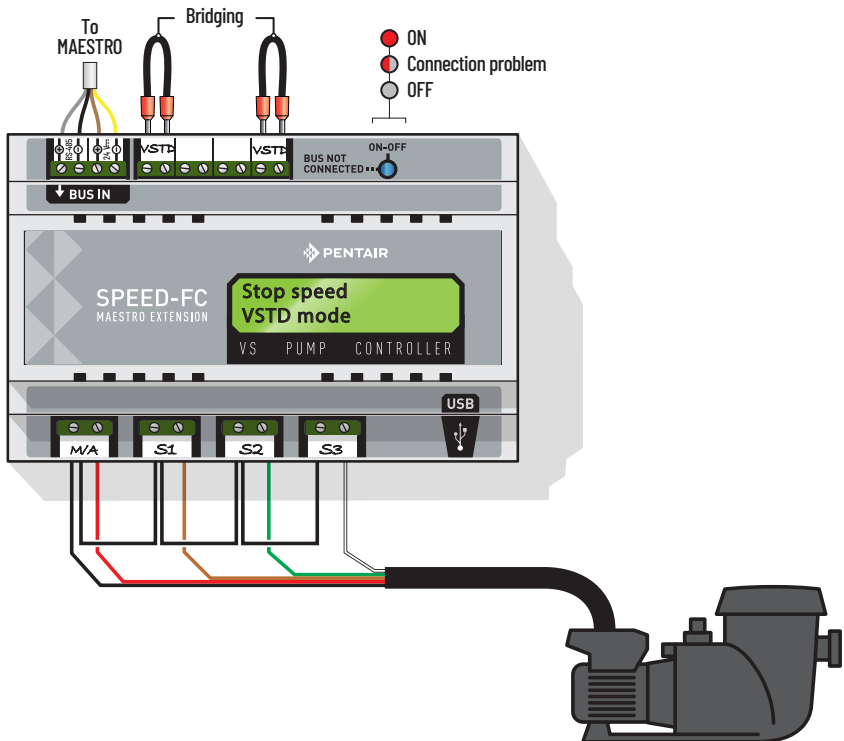
- Control the appropriate speeds for the HAYWARD pump, 1 (Eco), 2 (Normal) and 3 (Max). Compatible with firmware 3.01 onwards (can be seen on the SpeedFC start-up).

IN1 and IN4 bridging connections:

- Connected: For use of the HAYWARD VSTD pump.

Possible connections on the 4 "speed" connectors/HAYWARD VSTD installation:

- STOP: Outlet used to stop the VSTD pump.
- Eco speed: Speed used for filtration when pool use is low or at mid-season. This speed is also used by MAESTRO for anti-freezing.
- Normal speed: Speed used for filtration when the pool is used or in the hot season.
- Maximum speed: Speed used for backwashing.



ZODIAC FloPro VS: Connections and functions

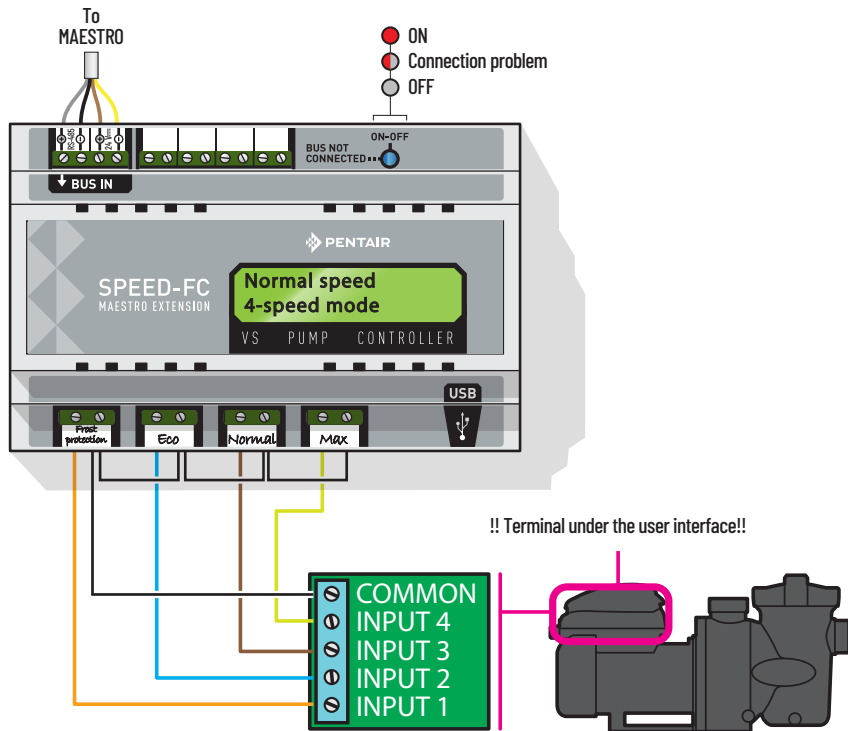
- On the pump, set:
 - The speeds 1 < 2 < 3 < 4
 - Control all operation lengths at '0'

IN bridging connections:

- **Not connected:** For use of the ZODIAC FloPro VS pump.

Possible connections on the 4 "speed" connectors/SPECK 90 EcoMotion installation:

- **Anti-freezing:** Outlet used to trigger filtering for a water temperature +3 °C (modifiable)
- **Eco speed:** Speed used for filtration when pool use is low or at mid-season.
- **Normal speed:** Speed used for filtration when the pool is used or in the hot season.
- **Maximum speed:** Speed used for backwashing.



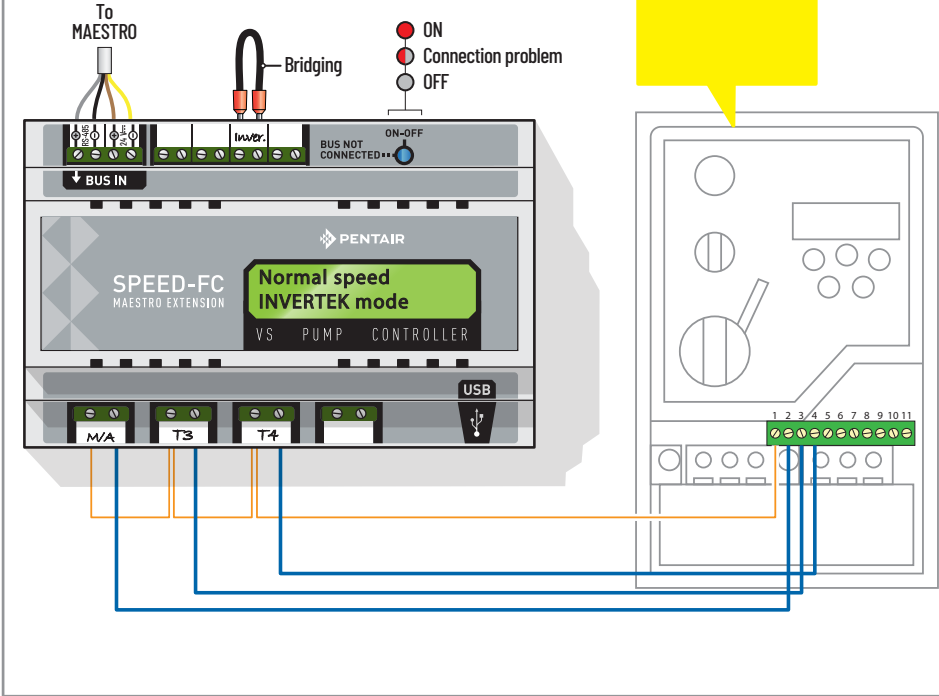
Invertek Drives/Optidrive E2 variator

i This assembly allows a standard filtration pump with a fixed speed to be transformed into a pump with variable speeds, and also benefits from a strong energy gain.

IN3 bridging connections:

- Connected: For use of the Invertek variator

Terminal mode:
P12 = 0
P15 = 2



Parametrisation at www.domotique-piscine.eu

Once Speed FC is connected and powered via MAESTRO, connect an account to www.domotique-piscine.eu, select Pool Properties on the pool concerned, then tick Activate the Variable Speed Filtration mode. The respective pool then receives a new filtration speed sub-menu.

MAESTRO selects the suitable speed depending on events (water temperature to trigger the anti-freezing, starting of an involved piece of equipment)

Only works actively if the Speed FC housing is connected to a PENTAIR IntelliFlo pump

The screenshot shows a configuration window for Speed FC. At the top, it displays 'Filtration speeds: 23456' with a red close button. Below this, there are three main sections: 'Filtration speeds', 'Manual', and 'Speed event'. The 'Filtration speeds' section has a dropdown menu set to 'Automatic'. The 'Manual' section lists four speed options: 'Frost protection speed' (selected with a radio button), 'Economic speed', 'Normal speed', and 'Maximum speed'. The 'Speed event' section lists seven events, each with a checked checkbox: 'Heating', 'Chlorinator', 'Program filtration timer', 'Aux 1', 'Aux 2', 'Aux 3', 'Aux 4', and 'Aux 5'. A blue 'Record changes' button is located at the bottom of the window.

Change from Eco speed to Normal speed if one of these elements is ticked and this equipment is switched on.



PENTAIR INTERNATIONAL LLC,

Ave. de Sevellin 18, CH-1004 - LAUSANNE, Switzerland

Copyright – Limited Licence: except as specifically permitted herein, no portion of the content of this document may be reproduced in any form or by any means without the prior written permission of Pentair International SRL.