



Rate Control Module Installation Manual

Precision Planting®

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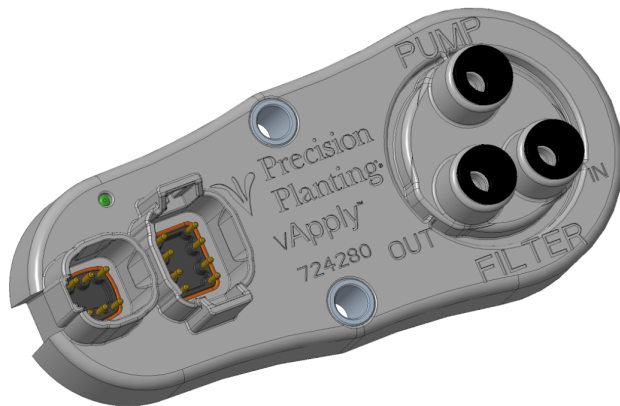
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Introduction

The rate control module is used to control the speed of hydraulic motors or PWM controllers. This would apply to the following product lines and applications.

- vApply Granular — Control of a PWM valve for a hydraulic motor driving a granular metering system.
- vApply Base — Control of a PWM valve on a hydraulic motor driving a positive displacement liquid pump for planter wide control
- vApplyHD and vApplyHD Section — Control of a PWM valve for a hydraulic motor driving a liquid pump OR a PWM driver for a electric diaphragm liquid pump.

There are two versions of the rate control module. Part number 724280 (part of kit 724290) is a rate control module with built in liquid pressure sensors. This module is used on Gen2 vApplyHD systems OR Gen3 controlled systems (all systems).



Beginning summer of 2021 a new version of the rate control module was introduced. Part number 724500 is the rate control module (part of kit 724560). Also offered is a 724525 liquid pressure module. These part numbers are ONLY used with Gen3 controlled systems and are recommended for new installations of Gen3 systems.



System Specific Notes

vApply Granular dry fertilizer control

vApply Granular is a system in which the 20|20 Gen3 monitor can control a hydraulic motor by PWM valve to drive a dry granular fertilizer metering system and control the application rate. Each hydraulic motor will need an individual rate control module connected to control the motor.

Required equipment - 20|20 Gen3, PDM, rate control module(s) with harnessing to either PDM or row CAN expansion hub, pump/motor harness, hydraulic motor with PWM solenoid control and shaft speed sensor, granular fertilizer metering system.

vApplyBase liquid fertilizer control

vApplyBase is a system in which the 20|20 Gen3 monitor can control a hydraulic motor by PWM valve to drive a positive displacement liquid fertilizer pump for planter wide rate control. In this application the hydraulic motor MUST have a shaft speed sensor for motor speed feedback to the rate control module. In addition a planter wide flowmeter or FlowSense will be used for mapping of the liquid rate applied. Note: electric pumps CANNOT be used.

Required Equipment - 20|20 Gen3, SRM system, rate control module, pump/motor harness, hydraulic motor with PWM solenoid control and shaft speed sensor, positive displacement liquid fertilizer pump.

vApplyHD and vApplyHD section liquid fertilizer control

vApplyHD is a system in which the 20|20 Gen2 or 20|20 Gen3 monitor is used to measure and control the rate of liquid application in a row by row or section based system. The pump providing flow can be ground drive, hydraulic drive or electric drive. ALL vApplyHD systems should have a rate control module connected to the system, even if the speed of the pump is not being controlled by the 20|20. If the 20|20 will control the speed of the pump, then a pump harness will connect the rate control module and the pump (or PWM module for electric pumps).

Required equipment - 20|20 Gen2 or 20|20 Gen3, SRM system, rate control module, harnesses for connection to PDM or row CAN expansion hub, pump/motor harness, vApplyHD modules, liquid fertilizer pump and plumbing. (Note: If an electric pump is used, a PWM driver will also be required — one example of a compatible PWM driver is the MicroTrak 18385)

Installation

Step 1:

Mount the rate control module to the implement.

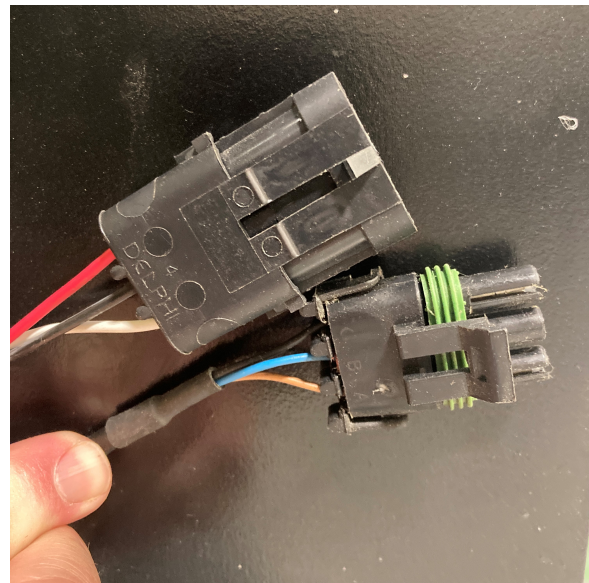
Use the included hardware to mount the rate control module. The rate control module will function in any orientation, however it is recommended to be mounted with the plugs NOT facing up to avoid water collecting in the electrical connection causing corrosion. The rate control module should be installed within 4 feet of the hydraulic motor or PWM electric motor driver as the vApply pump/motor harness (724287) is 5 feet long.

Step 2:

Hydraulic Motors (if you are installing an electric pump, skip to step 3)

Connection of the rate control module to the hydraulic motor

There is a 3 pin weatherpack connection on the motor harness that should be connected to the hydraulic motor shaft speed sensor (if present). This connection is REQUIRED on any vApply Base or vApply Granular installation and is optional for vApplyHD installations.



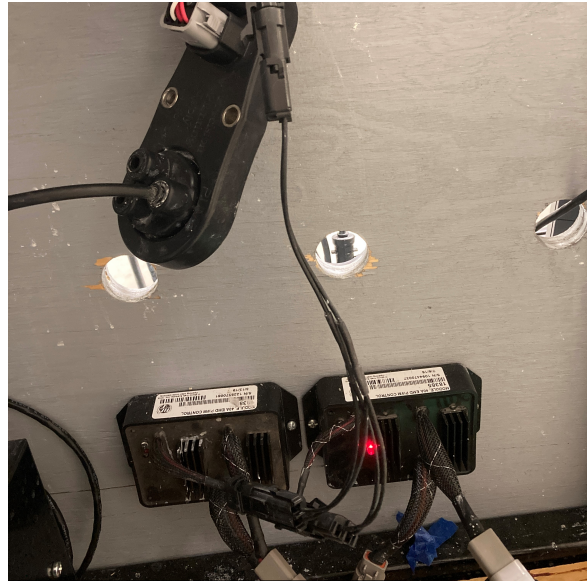
There are two connections provided for the PWM solenoid, one is the two pin weatherpack and the other is a two pin metripack. Both of these provide the PWM signal, so only one of these will be used. Connect one of the 2 pin connectors to the PWM solenoid on the hydraulic motor. If your connection is a different type, there are various adapters available.



Electric pumps

Connection of the rate control module to an "PWM electric motor driver"

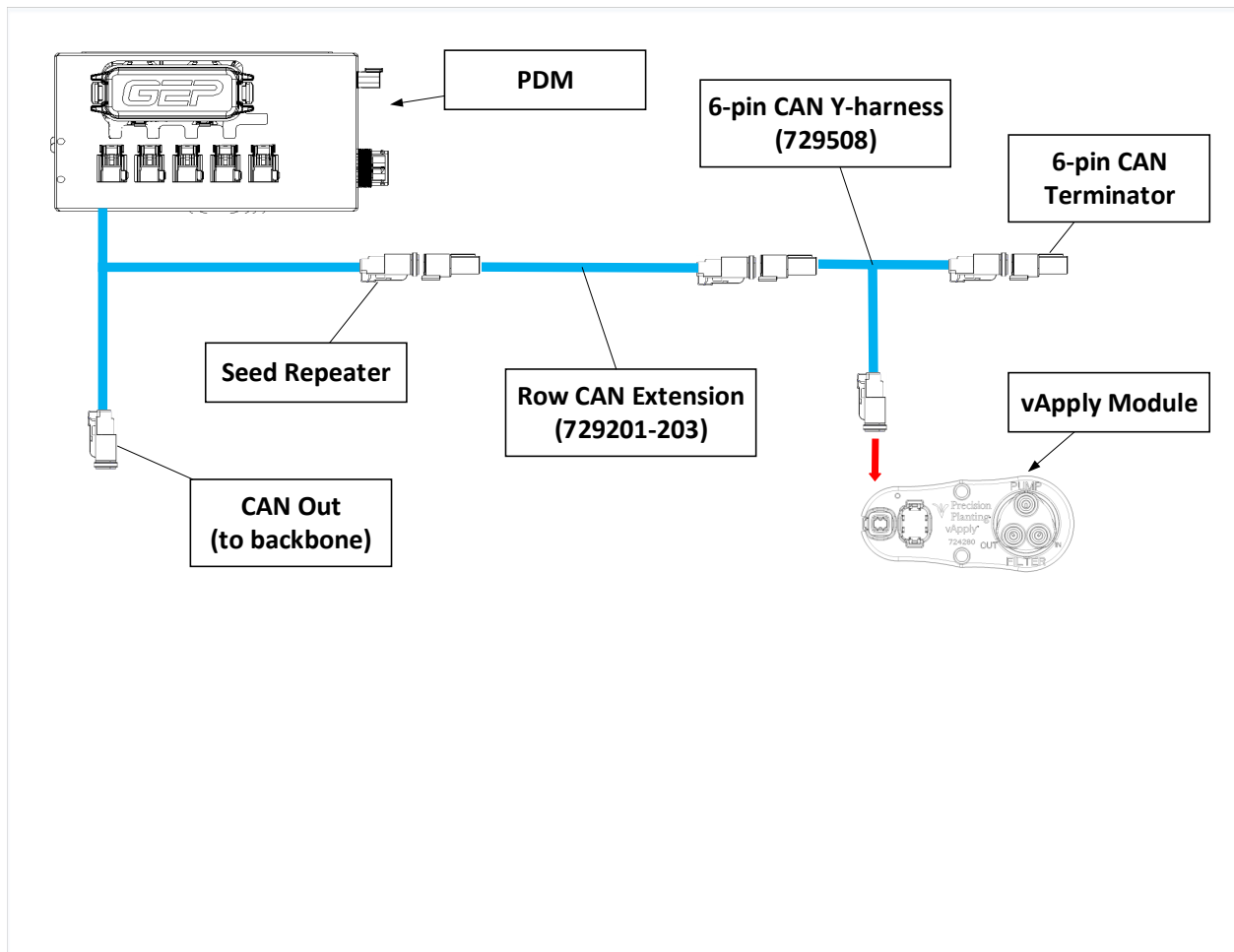
The rate control module can be used to control the speed of electric diaphragm pumps. A PWM controlled electric motor driver (example MicroTrak part number 18385) will be REQUIRED in addition to the electric pump. Connect the vApply pump/motor harness (724287) to the rate control module. Then connect one of the available two pin connections (weatherpack or metripack) to the PWM electric motor driver input signal connection. Then connect the battery power and electric pump to the PWM driver according to the manufacturer instructions.



Step 3:

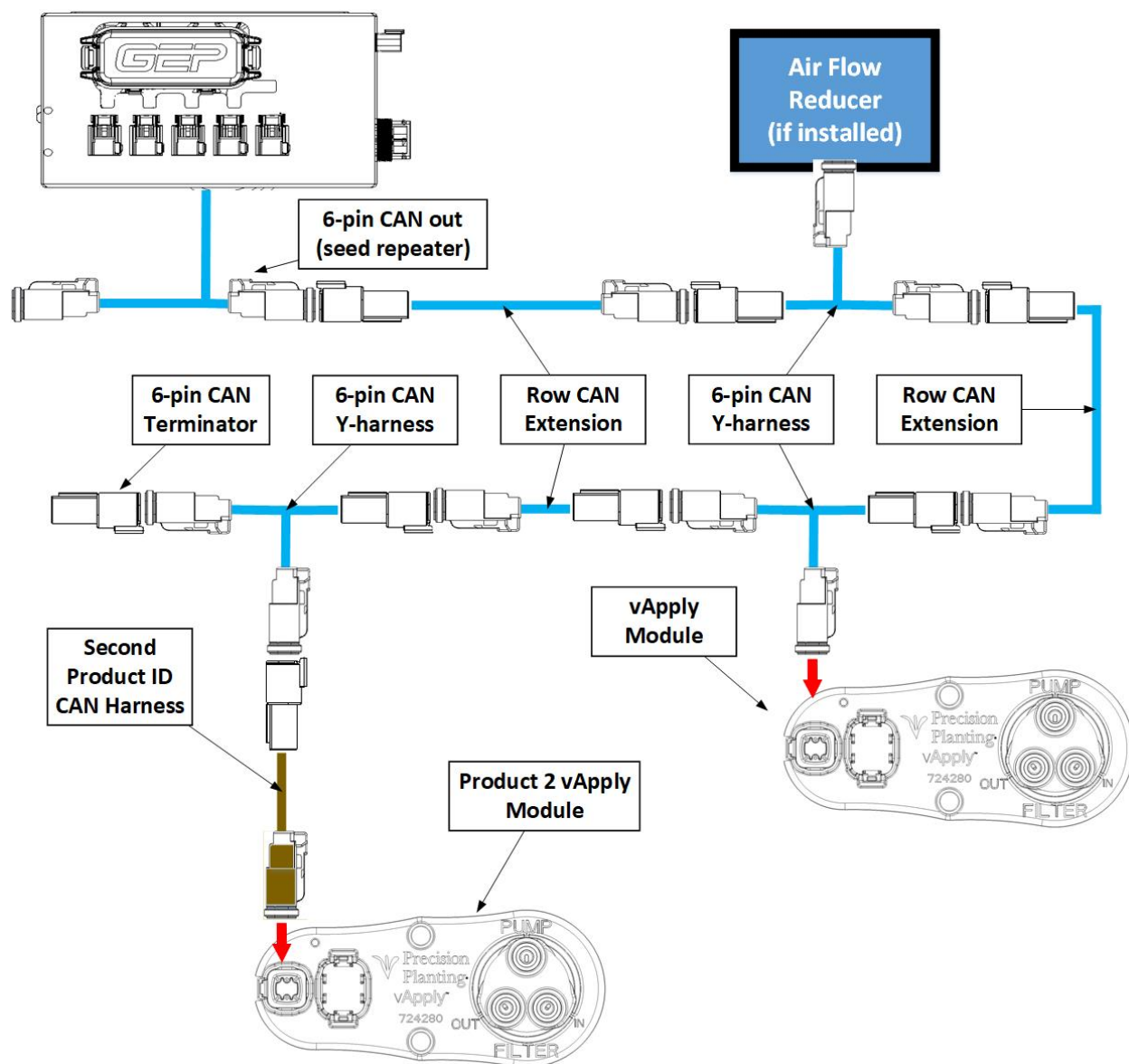
Connection of CAN communication to the module for 20/20 SeedSense Gen2 monitor systems (if 20/20 Gen3 installation skip to step 4)

The vApply rate control module (724280) will be electrically connected to the 6 pin "Seed Repeater" connection coming out of the bottom of the PDM. If an extension is needed to connect the PDM to vApply rate module, there are SRM row CAN extensions available (729201, 729202, 729203). When connecting the module a 6 pin CAN Y harness is used (729508) and after the last device in the circuit the CAN terminator is installed. If other devices such as the seed repeater or air flow reducer are installed, additional 6 pin CAN Y harnesses and SRM row CAN extensions can be installed. The sequence of the module connection is not important.



Two liquid system — 20/20 SeedSense Gen2

If the planter will have two different products applied, the second vApply rate control will need a second product identification harness (729761) installed with the brown connector DIRECTLY plugged into the module.



Step 4:

Connection of CAN communication to the module for 20|20 Gen3 systems

The Gen3 system can use either the 724280 vApply rate control module with integrated pressure sensors (724280) or the vApply rate control module (724500). There are two options as to how to connect the vApply rate control module to the SRM system.

Option 1 - connection of the module to the PDM

The rate control module will be electrically connected to the 6 pin "Seed Repeater" connection coming out of the bottom of the PDM. The module should be mounted within 4 feet of the connection to the PWM valve of the motor or PWM controller as the vApply pump/motor harness (724287) is 5 feet long. If an extension is needed to connect the PDM to the rate control module, there are SRM row CAN extensions available. When connecting the module a 6 pin CAN Y harness is used (729508) and after the last device in the circuit the CAN terminator is installed.

Multiple liquid products

If the planter will have two, three, or four different products applied, each additional rate control module will need a identification harness installed with the appropriate colored connector DIRECTLY plugged into the module. Second product will use the brown identification (729761), third product will use the white identification (729543) and fourth product will use the green identification (729544).

See the diagrams in the previous section for Gen2 systems for a visual of these installation as it is the same as Gen2 systems.

Option 2 - connection of the module to a row CAN expansion hub

The vApply rate control module will plug directly into the CAN expansion hub on any row, generally the row closest to the pump or hydraulic motor to be controlled. A row CAN jumper will be used and if additional length is needed a SRM row CAN extension can be used (729201, 729202, 729203). If only one vApply rate control module is connected to a single row, then a black jumper can be used for any system (example 729485). An example of this is a two product liquid system can have the vApply rate control module for starter plugged into row 7 with a black jumper and the vApply rate control module for nitrogen plugged into row 10 with a black jumper. If more than one rate control module is connected to a single row, then a different color jumper will be needed for each module connected to the row (729484 -brown, 729493 - white, 729494 -green).



If using the liquid pressure module (725525) on a Gen3 system, the module **MUST be connected to the same location as the 724500 vApply rate control module using the same color jumper.**

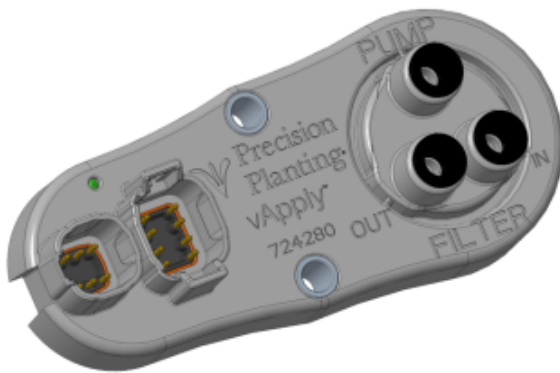
Option 1 is to use a CAN Y harness (729508) to install on the PDM 6 pin CAN connection. The purpose of the Y harness is so the CAN can be terminated after the module. (in this installation the vApply Rate control module **MUST** also be installed on PDM 6 pin CAN with the same color jumper).

Option 2 is to use a CAN jumper to connect to a CAN expansion hub on a row, again it must be the same row and same color jumper as the 724500 vApply rate control module.

Step 5:

Connections for liquid pressure measurement (if applicable)

If using the vApply rate control module with integrated pressure sensors (724280) there are three connections for liquid pressure measurement, labelled "pump", "filter in" and "filter out". These connections are recommended but not required for operation of the vApplyHD or vApply Base system. Use ¼" plastic PTC tubing to connect the fitting labelled "Pump" to a fitting in the system for system pressure. On a vApplyHD system there is a ¼" PTC fitting supplied with the vApplyHD plumbing essentials kit on the fitting for the pressure relief return where this can be connected.



Use ¼" plastic PTC tubing to connect the "filter in" and "filter out" connections to the fittings provided on the filter kit (either high flow or low flow).

For connection of the 725525 Liquid Pressure Module The PTC connections for liquid pressure are labelled "A", "B", and "C". It is recommended that any vApplyHD system utilizing the 725500 rate control module a liquid pressure module installed and measuring "system pressure", "filter in" and "filter out". To accomplish this connect as described in the previous section.

Connection "A" must be the pump pressure

Connection "B" must be the filter in

Connection "C" must be the filter out

Step 6:

If a vApplyHD system, for installation of the vApplyHD module and plumbing see the vApplyHD installation document and diagrams available on precisionplanting.com and then click "Support". For installation of vApplyBase and vApply Granular systems you are now ready to move to the operations manual for setup of the 20|20 monitor.