

## 9 Connecting a Power Supply to the Instrument

Important: Do not connect external power until the final step



Remove both ICT Bus plugs from either end of the sensor.



Unscrew the end of the plug 1 to 2 turns.



Remove the Bus plug sealing cap.



Insert either polarity of the external power source cable.



Strip a maximum of 15mm from the end of the cable.



Pull the cable back so only that the stripped wires protrude from the ICT bus plug.



Bend the stripped wires back over the end of the ICT bus plug.



**Important** : Seal the cable against water ingress by tightening the end of the plug.

**Repeat for second bus plug**



Insert the ICT bus plugs into the endcap of the sensor. The plugs can be inserted in either polarity and will click when seated into position.



### External power options

1. 12V Solar panel only
2. 12V Solar panel and battery
3. 12V DC power supply

Connect the power cable to the external power source.

Figure 5: Using the unique ICT Power-Bus, and Power-Bus Plugs to trickle charge the SFM1's internal battery.

The unique power-bus plug design was developed by ICT International to simplify the electrical wiring process. It minimises the need for custom tools in the field requiring only that the outer cable sheath be stripped back to expose the copper wire. No other tools are required with all necessary components and fixings fully incorporated into the instrument design. Retaining straps ensure the power-bus plugs do not separate from the instrument when removed from the power-bus during wiring preparation and connection of external power.

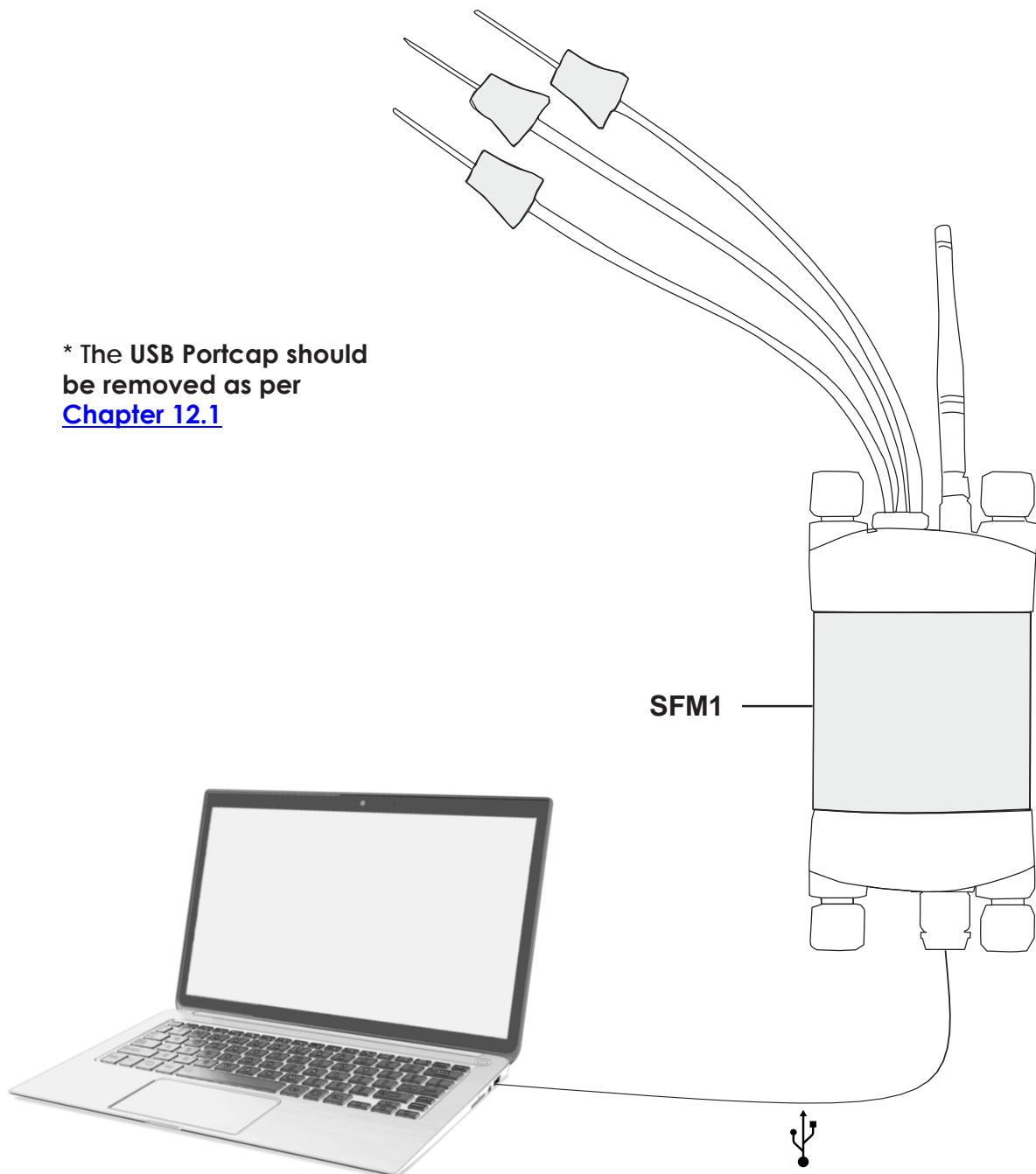
Powering and charging the instrument is very easy and there are five different options to choose from providing flexibility in experimental design to suit your specific situation: Direct low-rate via USB<sup>1</sup>, Direct via Solar Panel, External 12v Battery, combination of Solar Panel and External Battery and daisy-chaining instruments to share a power supply. The following diagrams illustrate the use of the unique power-bus plugs and the five different power configuration options that can be used to provide continuous instrument operation and trickle charging of the internal battery for long term deployment.

Note: <sup>1</sup> The SFM1 has a variable charge rate of between 60 and 200mA. The USB charge rate is 100mA. Maximum charge rate of 200mA is active when external voltage is above 16 volts DC (Solar Panel, Battery or CH24). Time required to fully charge the SFM1 @ 200mA is 3 hours. Time required to fully charge the SFM1 via USB is 6 hours.

## 9.1 Individual Power Supply Connections

### 9.1.1 Connecting Power Directly via a USB cable from a Computer

\* The USB Portcap should be removed as per [Chapter 12.1](#)



### 9.1.2 Connecting Power Directly via Solar Panel

\* The SFM1 Sap Flow Meter is non-polarised.

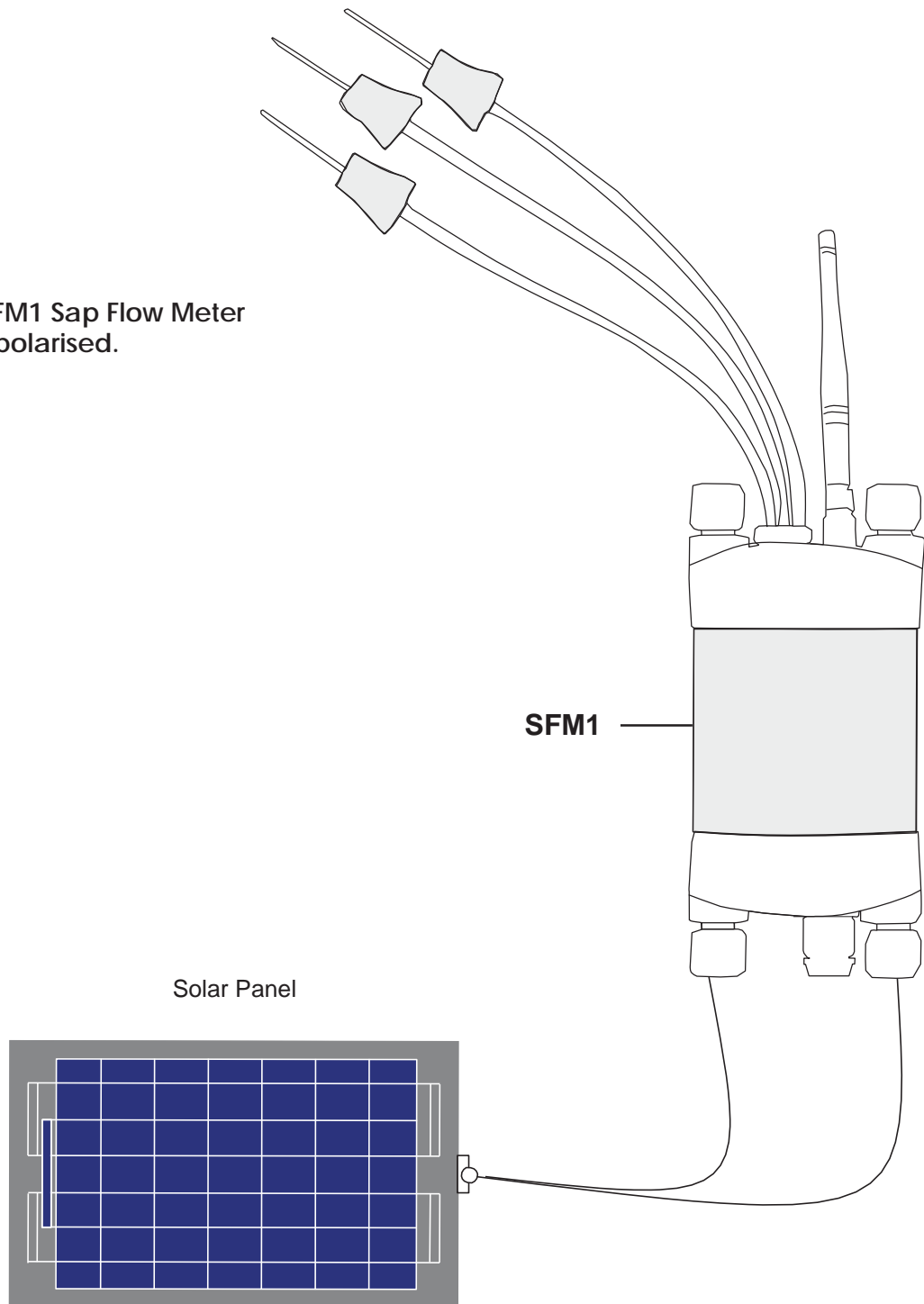


Figure 6: Solar panel connected directly to a SFM1 Sap Flow Meter

### 9.1.3 Connecting Power via External 12V Battery

\* The SFM1 Sap Flow Meter Is non-polarised.

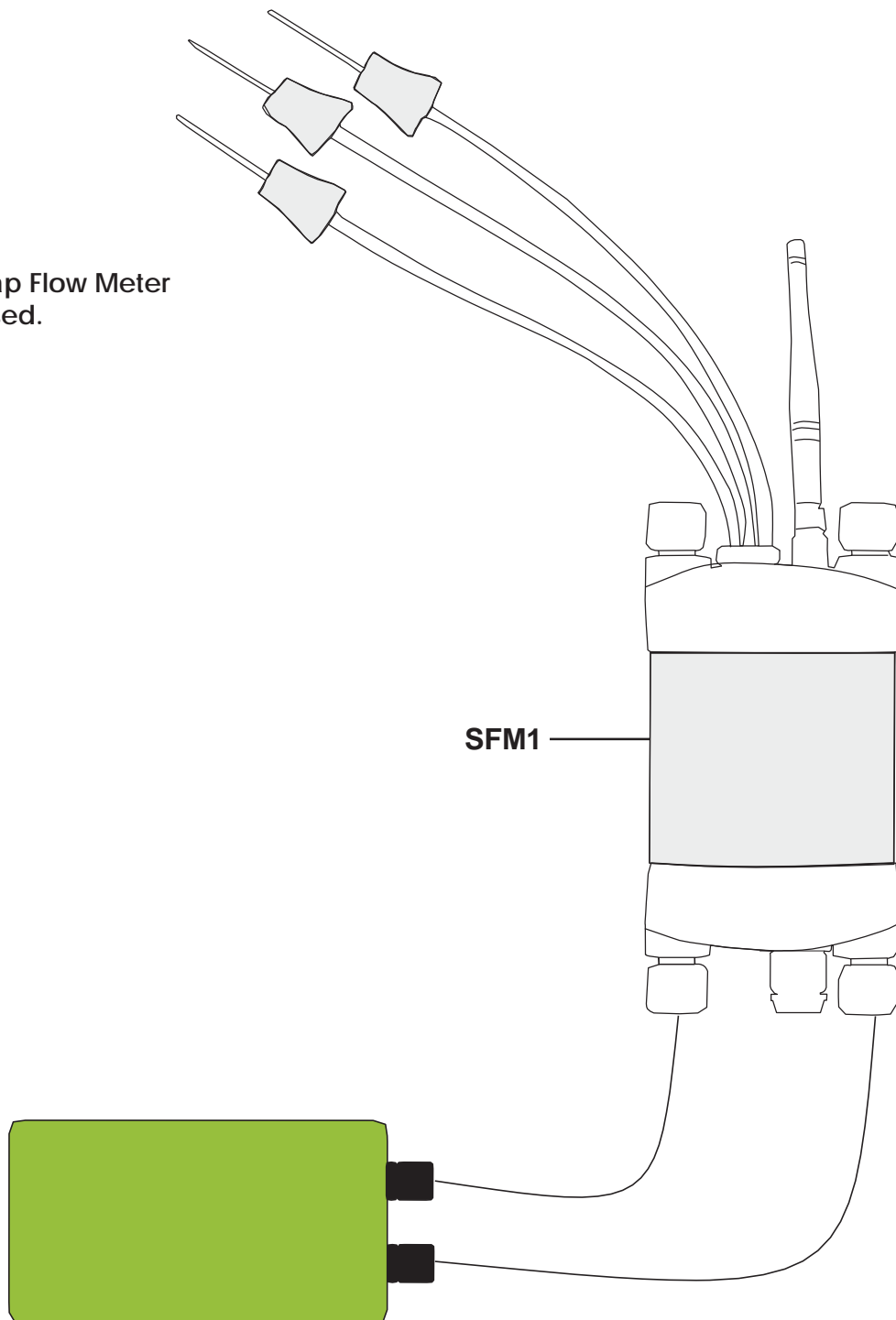


Figure 7: External 12V battery connected directly to a SFM1 Sap Flow Meter

### 9.1.4 Connecting Power via External 12V Battery and Solar Panel

\* The SFM1 Sap Flow Meter Is non-polarised.

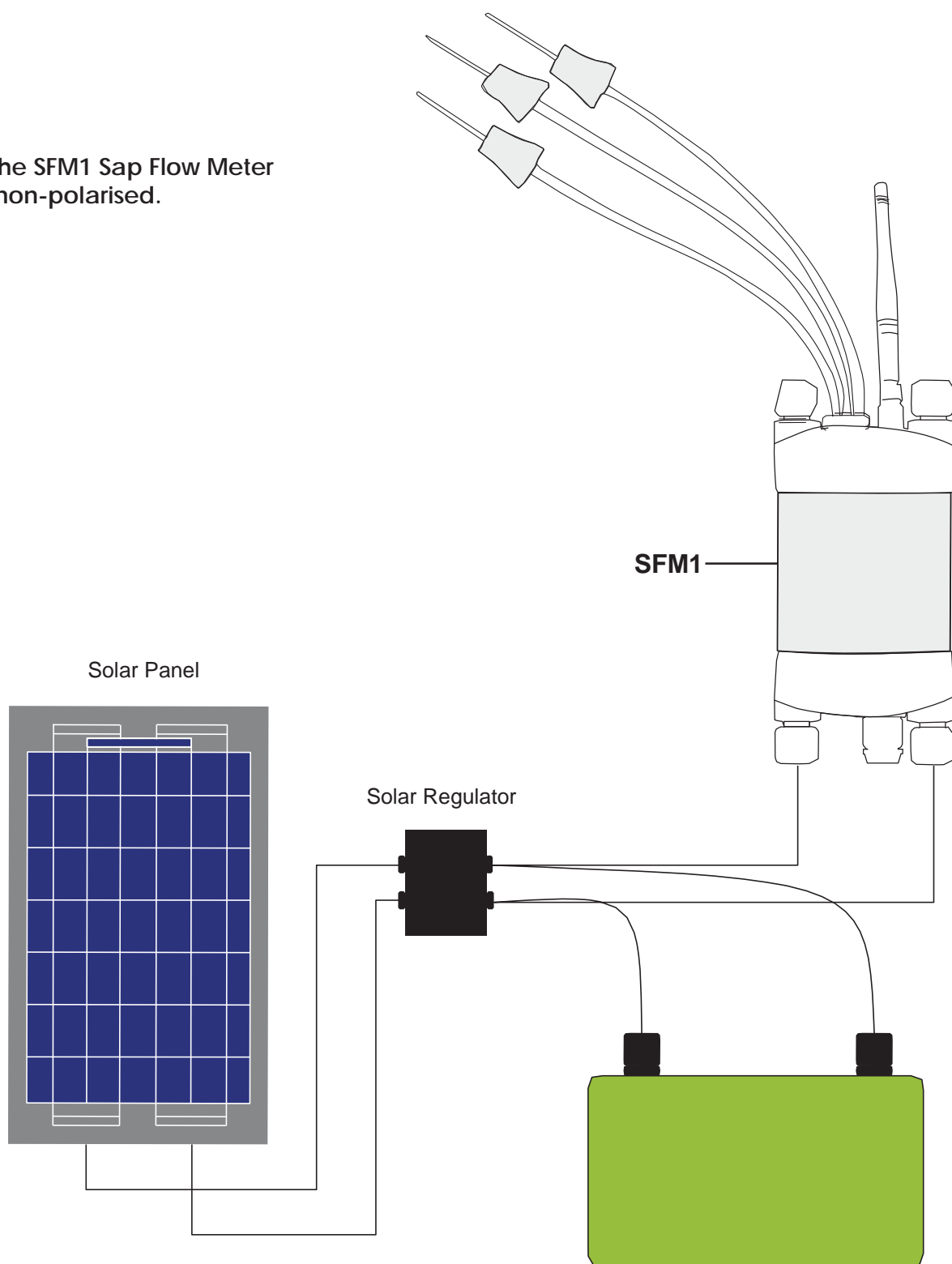


Figure 8: Solar panel connected to an external 12V battery with a solar regulator to charge a SFM1 Sap Flow Meter.

### 9.1.5 Sharing an External 12V Battery and Solar Panel via Daisy Chaining

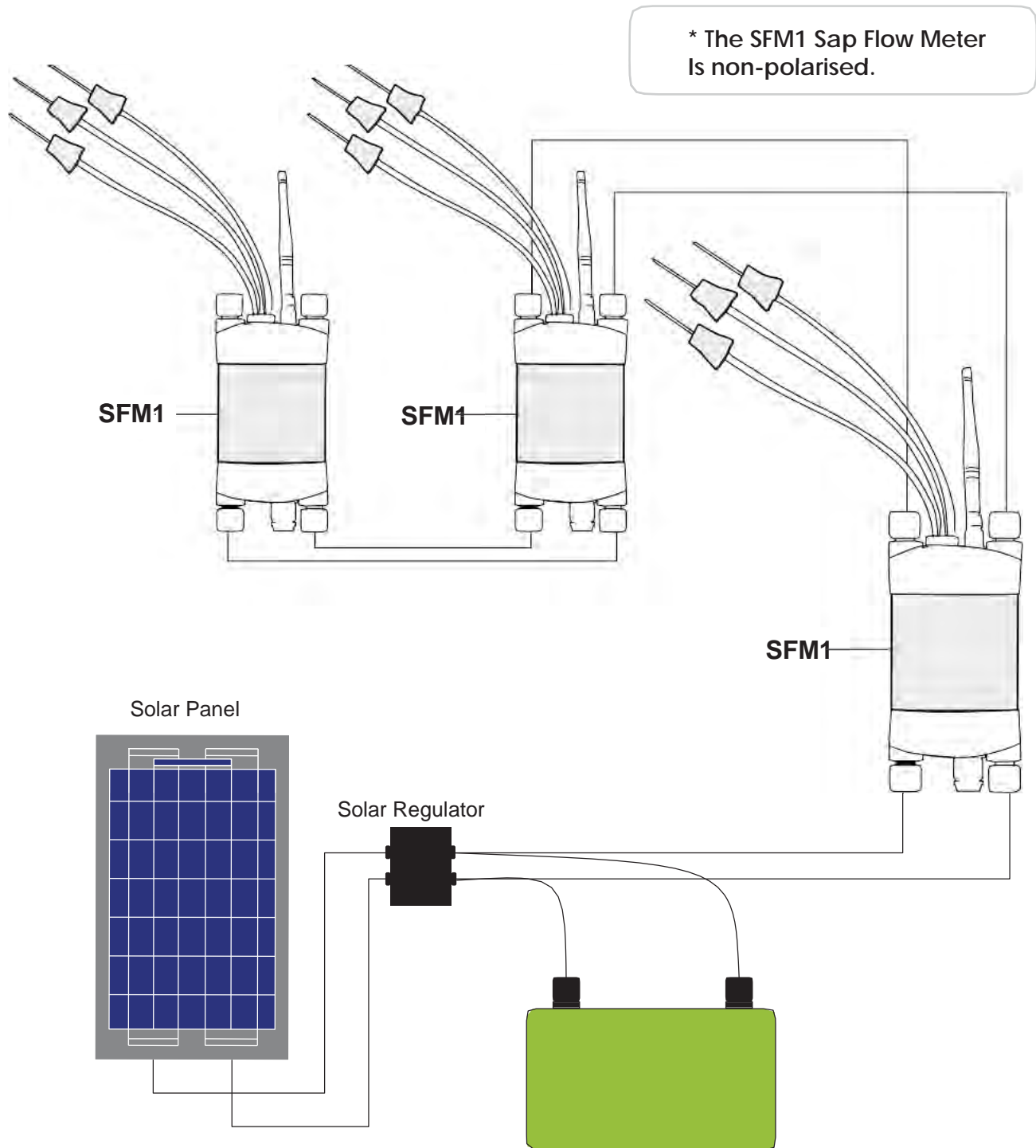


Figure 10: Solar panel connected to an external 12V battery with a solar regulator to charge multiple SFM1 Sap Flow Meters daisy chained together