

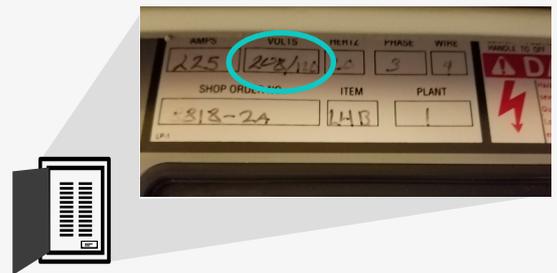
How to Scope a Verdigris System

Thanks for your interest in Verdigris! In this guide, you will use the information found in your building's electrical panel or electrical single-line (or one-line) diagram to identify the specific equipment, available at shop.verdigris.co, that will work compatibly with your setup. Simply, we want to answer three questions: 1) Am I compatible with Verdigris? 2) How many current transformers (CTs) do I need? 3) What sizes of CTs do I need? Electric panels and panel schedules come in all forms. Throughout this guide, you will need to hunt for various bits of information; don't be alarmed if you find yourself guessing or approximating.

a What's the panel voltage?

There are two options for the panel voltage, **480/277V** and **280/120V**. Look for this information labeled as "volts" or "voltage."

After you've identified your panel voltage and it falls under the options listed, move on to **b**.



b How many phases and wires?

Look for info regarding "phase" and "wire." Verdigris supports 3 phase 4 wire terminals. More info 

If your electrical configuration is supported, please move on to **c**.

Verdigris systems tap voltage and power through a 3-phase, 4-wire terminal block and can used with:

- Split-phase 100-277V
- Three-phase 120/208V
- Three-phase 240/416V wye
- Three-phase 277/480V wye

c Are there available spares?

The Verdigris hardware itself powers from voltage taps from spare breakers. Look at the electrical panel and see if there are any available breakers. You can also refer to the the panel schedule, where spare breakers are marked as "spare" (or "space" or "unused"). Here's an example panel schedule with "spare" marked:

VOLTAGE: 208/120		MAINS:		
PH & WIRES: 3P 4W		AIC RATING:		
BUSSING AMPS: 100		MOUNTING:		
LOAD DESCRIPTION	AMP	P	DWG CKT	POLE ID
X EXISTING CIRCUIT	20	1	1	1
X EXISTING CIRCUIT	20	1	3	3
X EXISTING CIRCUIT	20	1	5	5
X EXISTING CIRCUIT	20	1	19	19
SPARE	20	1	21	21
X SCALE / ORDER PRINTER	20	1	23	23
X EXISTING CIRCUIT	20	1	25	25
X EXISTING CIRCUIT	20	1	27	27
SPARE	20	1	29	29
SPARE	20	1	31	31
SPARE	20	1	33	33
SPARE	20	1	35	35
SPARE	20	1	37	37

If you have any issues identifying the information in steps a, b or c, you can ask for help by going to the "chat" icon in the lower right corner of the shop.verdigris.co page. Otherwise, move on to **d**.

d

How many circuits do I want to monitor?

This question will inform how many current transformers (CTs) you will need to purchase from Verdigris to efficiently monitor your building. Depending on the number of phases per equipment, you will need between 1-3 CTs to monitor each equipment. Verdigris Systems can monitor up to 42 circuits.



a Verdigris Smart CT

In the example panel schedule here, a motor and refrigerator are three phases each (A, B, C) and monitoring them would require a total of 6 CTs:

Panel:	Panel 1		
Volts:	277 / 480		
Phase	3 PHASE 4 WIRE		
Circuit #	Circuit Name	Phase	Amp
1	LIGHTS	A	20
3	LIGHTS	B	20
5	LIGHTS	C	20
7	MOTOR	A	60
9	MOTOR	B	60
11	MOTOR	C	60
13	REFRIGERATOR	A	400
15	REFRIGERATOR	B	400
17	REFRIGERATOR	C	400
19		A	



a larger current transformer

After identifying the number of CTs you would like to purchase, move on to **e**.

e

What sizes of CTs do I need?

You will need different sized CTs depending on the rated amperage of the breakers (this can often be marked on the breaker itself). Refer to the graph below to see which corresponding CTs go with which breakers. Record this information so you can easily make the purchase online.

breaker amperage (less than or equal to)	corresponding CT
90A	Verdigris Smart CT, 0.2" circular opening
300A	Large CT, 200A hinged, 1" circular opening
900A	Large CT, 600A hinged, 1.38" circular opening
7000A	Large CT, 500A coil, 4.17" circular opening
14000A	Large CT, 1000A coil, 4.17" circular opening

Using this chart and the example panel schedule in step d, we see that we would need six Verdigris Smart CTs for the lights and motors, and three 500A or 600A (depending on the size) large CTs for the fridge.

That's all there is to it! You're just one step close to generating actionable insights on your building's energy consumption and waste with Verdigris Technologies.