OpenStrom - Relays Considerations

Having the switching functionality in OpenStrom enables a lot of use cases.

The challenge is:

- The relays are a major cost of the device and not everybody might use them.
- While some use cases only require smaller loads, we also have people that ask about 30A+. The size of the relay is a cost driver.
- Some relays require 12V power while other are 5V. So our power supply might have to provide different voltages for the PCB.

Options considered:

Part	**Notes**	**Price (@1000)**
SLEIB30 8 relay board	http://www.srilakshmielectronics.in/index.php?route=product/product&product_id=111	$3,20
SSR25A		$36,17
T90S5D12-5		$1.72
jqx-15f		$0.50
HF102F		$0.60
JQX-102F		$0.34
JQX-16F		$0.34

So we have to explore three questions:

1. Can we build a “relay shield” that is only added when people buy the relay edition?
2. Can we support different relays (without doing multiple designs and lots of different manufacturing options), so that people could choose between relays using some kind of plug and play mechanism?
3. What is the form factor of the relays (will they fit into a standard DIN rail fusebox size?) and what connectors do we need?

	Max. load	Total max.	Voltage	Size	Type
SLEIB30 8 relay board	###				
SSR25A	25 A	25 A	240VAC	58x27x20	SPSO
T90S5D12-5	30A	30A	277VAC	32.2x27.42x20.4	SPSO
jqx-15f	30A	30A	240VAC	27.5x23.5x16	SPSO
HF102F	20A	25A	250VAC	27.5x23.5x16	SPSO
JQX-102F	20A	80A	250VAC	32.4x27.5x27.8	SPSO
JQX-16F (40A)	*40A*	*40A*	*250VAC*	*32.4x27.5x27.8*	SPSO

We estimate the cost to build a “relay shield” at about $5 in addition to the cost of the relays. The “no shield” option would add about $1 to our BOM cost.

Since we found cost effective 40A relays to accommodate higher loads and the 10 relays add only about $3-5 to the BOM, it makes more sense for us to always include the relays, even if some users are only interested in measuring.

Selection

Based on the technical parameters and the price point of the different options we have decided to use the JQX-16F (40A).