Log 27: Nexon EV slow charging speed, problems and solution / Nexon EV യുടെ സ്ലോ ചാർജിങ്ങ് സ്പീഡും അതുമായി ബന്ധപ്പെട്ടുള്ള പ്രശ്നങ്ങളും പരിഹാരവും

Scenario :

1) Tata is advertising 3.3kW for Nexon EV while charging from a 16A socket. But the vehicle is taking around 2.6-2.7kW only using TATA supplied EVSE. Before the prime update, it was around 2.8-2.9kW.

2) I think this is applicable for all TATA EV. I have only checked with the Nexon EV prime.

Problem :

1) Even if you have more than sufficient voltage (>230V), the EV won't charge with maximum possible power with TATA supplied EVSE (TATA supplied EVSE is 13A rated. So it should be able to handle 3.12kW at 240V).

2) Even if you are buying a good quality Type 2 EVSE with 3.3kW/16A, you won't be able to charge your vehicle with 3.3kW.

Solution :

1) TATA must remove the power restriction and give maximum power to the users (at least for those who are buying good quality Type 2 EVSE with 3.3kW/13A or 3.3kW/16A)

2) Currently, if 1-2 hour reduction in your slow charging can help you, buy an adjustable 7.2kW EVSE from a good brand. It will give you 3.2kW.

Check the attached table for more details.

ഇപ്പോഴുള്ള അവസ്ഥ :

1) 16A plugtop -ൽ ചാർജ് ചെയ്യുമ്പോൾ Nexon EV യിൽ 3.3kW ചാർജിങ്ങ് പവർ കിട്ടും എന്നാണ് TATA പരസ്യം ചെയ്യുന്നത്. എന്നാൽ യാഥാർത്ഥത്തിൽ TATA തരുന്ന EVSE കൊണ്ട് കിട്ടുന്നത് ഏതാണ്ട് 2.6-2.7kW മാത്രമാണ്. Prime update കിട്ടുന്നതിന് മുമ്പ് ഏതാണ്ട് 2.8-2.9kW വരെ കിട്ടുമായിരുന്നു.

2) ഞാൻ ഇത് Nexon EV prime-ൽ മാത്രമേ നോക്കിയിട്ടുള്ളൂ, എന്നാൽ മറ്റു TATA വാഹനങ്ങൾക്കും ഇത് തന്നെയാണ് അവസ്ഥ എന്നാണ് എനിക്ക് തോന്നുന്നത്.

പ്രശ്നം :

1) നിങ്ങളുടെ വീട്ടിൽ ആവശ്യത്തിൽ കൂടുതൽ voltage (>230V) ഉണ്ടെങ്കിൽ കൂടി TATA തരുന്ന EVSE വെച്ച് പരമാവധി പവർ ലഭിക്കുന്നില്ല. TATA തരുന്ന EVSE 13A തരാൻ പാകത്തിന് ഉള്ളതാണ്. അതായത് 240V ഉണ്ടെങ്കിൽ ഏതാണ്ട് 3.12kW കിട്ടേണ്ടതാണ്. എന്നാൽ വാഹനം ഏതാണ്ട് 2.6-2.7kW മാത്രമാണ് എടുക്കുന്നത്.

2) ഇനി കൂടിയ specification ഉള്ള മറ്റൊരു നല്ല EVSE വാങ്ങി എന്ന് കരുതിയാലും (3.3kW/16A) വാഹനം എടുക്കുന്ന പവർ കൂടുന്നില്ല.

Solution :

1) ഇപ്പോൾ ഉള്ള പവർ നിയന്ത്രണം TATA വാഹനത്തിൽ നിന്നും എടുത്തു മാറ്റണം. Onboard ചാർജറിൽ ഉള്ള പരമാവധി പവർ ഉപഭോക്താവിന് ഉപയോഗയോഗ്യം ആകണം. ഏറ്റവും കുറഞ്ഞത് പുറത്തു നിന്നും നല്ല

quality ഉള്ള Type 2 EVSE (3.3kW/13A or 3.3kW/16A) വാങ്ങുന്നവർക്ക് എങ്കിലും പരമാവധി പവർ കൊടുക്കണം.

2) ഇപ്പോൾ തൽകാലം ചാർജിങ്ങ് സമയത്തിൽ ഒന്ന് രണ്ടു മണിക്കൂർ ലഭിക്കാൻ അത്യാവശ്യം നല്ല ഒരു adjustable 7.2kW EVSE വാങ്ങിയാൽ മതിയാകും. അത് ഏതാണ്ട് 3.2kW നൽകും.

കൂടുതൽ വിവരങ്ങൾക്ക് കൂടെ ചേർത്തിരിക്കുന്ന പട്ടിക നോക്കുക.

Nexon EV Prime slow charging

Time taken for 0% to 90% only considered. Power reduction after 90% or 95% not considered.
Battery capacity considered as 30.2kWh. Actual time taken may be a bit lesser (faster charging).
This is just a table with some information. If you are planing to do anything, do at your own risk. Don't try to do anything if you don't know what you are doing.

Voltage	13A EVSE						3.3kW/16A EVSE						7.2kW/32A EVSE or 3.3kW/16A EVSE (with PP 220 ohms)						Time saving (approx hrs)
	Expected			Actual			Expected			Actual			Expected			Actual			
	Power (kW)	Current (A)	Time taken (approx hrs)	Power (kW)	Current (A)	Time taken (approx hrs)	Power (kW)	Current (A)	Time taken (approx hrs)	Power (kW)	Current (A)	Time taken (approx hrs)	Power (kW)	Current (A)	Time taken (approx hrs)	Power (kW)	Current (A)	Time taken (approx hrs)	
250	3.25	13.00	8.36	2.62	10.48	10.37	3.30	13.20	8.24	2.62	10.48	10.37	3.30	13.20	8.24	3.19	12.76	8.52	1.85
240	3.12	13.00	8.71	2.62	10.92	10.37	3.30	13.75	8.24	2.62	10.92	10.37	3.30	13.75	8.24	3.19	13.29	8.52	1.85
230	2.99	13.00	9.09	2.62	11.39	10.37	3.30	14.35	8.24	2.62	11.39	10.37	3.30	14.35	8.24	3.19	13.87	8.52	1.85
220	2.86	13.00	9.50	2.62	11.91	10.37	3.30	15.00	8.24	2.62	11.91	10.37	3.30	15.00	8.24	3.19	14.50	8.52	1.85
210	2.73	13.00	9.96	2.62	12.48	10.37	3.30	15.71	8.24	2.62	12.48	10.37	3.30	15.71	8.24	3.19	15.19	8.52	1.85
200	2.60	13.00	10.45	2.60	13.00	10.45	3.20	16.00	8.49	2.62	13.10	10.37	3.20	16.00	8.49	3.19	15.95	8.52	1.93
190	2.47	13.00	11.00	2.47	13.00	11.00	3.04	16.00	8.94	2.62	13.79	10.37	3.04	16.00	8.94	3.04	16.00	8.94	2.06
180	2.34	13.00	11.62	2.34	13.00	11.62	2.88	16.00	9.44	2.62	14.56	10.37	2.88	16.00	9.44	2.88	16.00	9.44	2.18
170	2.21	13.00	12.30	2.21	13.00	12.30	2.72	16.00	9.99	2.62	15.41	10.37	2.72	16.00	9.99	2.72	16.00	9.99	2.31
160	2.08	13.00	13.07	2.08	13.00	13.07	2.56	16.00	10.62	2.56	16.00	10.62	2.56	16.00	10.62	2.56	16.00	10.62	2.45
150	1.95	13.00	13.94	1.95	13.00	13.94	2.40	16.00	11.33	2.40	16.00	11.33	2.40	16.00	11.33	2.40	16.00	11.33	2.61

Unwanted power limit by TATA | **Power reduction due to low voltage/current limit** | **During low voltage, sometimes TATA EVSE takes lesser current (Not considered)** | **@svxps #svxps https://t.me/svXPs**

Utilisation of maximum power of On-Board charger | Special thanks to **Sibu (@sibusaman)** for technical help and **VJ** for better wordings.

SUMMARY

If reduction of 1-2 hours in charging time really matters you (for 0-90% charging), better upgrade to a 7.2kW EVSE (or 3.3kW/16A EVSE with 220 ohms PP resistance).
I think, TATA is limiting power output for all 16A EVSE's in software (detected using 680 ohms PP resistance) just to safeguard their EVSE that gets overheated easily.
If you have low voltage issue (less than 200V), 3.3kW/16A EVSE and 7.2kW/32A EVSE can help you upto some extend.
If you are satisfied with current charging time offered by TATA's EVSE, no action required and no need to spend money for new EVSE.

PLEASE NOTE

This is just a table with some information. If you are planing to do anything, do at your own risk. Don't try to do anything if you don't know what you are doing.
The 220 ohm resistance hack is required just due to TATA's unnecessary software restriction to safe guard their poor quality charger inturn restricting aftermarket 16A chargers as well (I think so).
DON'T TRY the 220 ohm resistance hack on TATA's 13A EVSE. It is having heating issues in lower power itself.
Better not to use modified 16A EVSE on cars that supports 7.2kW onboard charger.
If you are using 7.2kW/32A fixed EVSE, ensure recommended power wiring. If you are using 7.2kW/32A adjustable EVSE in 16A mode, better to use 16A MCB in the wiring.

Nexon EV Prime slow charging - with actual readings

Time taken for 0% to 90% only considered. Power reduction after 90% or 95% not considered.
Battery capacity considered as 30.2kWh. Actual charging time may be a bit lesser (faster charging).

User Id	13A EVSE (TATA's EVSE)					7.2kW/32A EVSE or 16A EVSE (with PP 220 ohm resistor)					Time saving (approx hh:mm)
	Voltage (V)	Current (A)	Power (kW)	SoC charged in 60 min (%)	0% to 90% time (max) (hh:mm)	Voltage (V)	Current (A)	Power (kW)	SoC charged in 60 min (%)	0% to 90% time (max) (hh:mm)	
Mine	245	10.80	2.62	8.68	10:22	225	14.24	3.19	10.56	08:31	01:51
Owner 1	233	11.26	2.61	8.64	10:24	226	14.01	3.16	10.46	08:36	01:48
Owner 2	196	13.23	2.59	8.58	10:29	192	15.99	3.07	10.17	08:51	01:38
Owner 3	235	11.24	2.63	8.71	10:20	235	13.51	3.16	10.46	08:36	01:44
Owner 4	213	12.43	2.64	8.74	10:17	210	15.25	3.19	10.56	08:31	01:46
Owner 5	219	12.26	2.67	8.84	10:10	217	14.86	3.20	10.60	08:29	01:41
Owner 6	219	12.09	2.64	8.74	10:17	214	14.89	3.19	10.56	08:31	01:46
Owner 7	225	11.87	2.65	8.77	10:15	221	14.52	3.20	10.60	08:29	01:45
Owner 8	230	11.59	2.65	8.77	10:15	229	14.00	3.20	10.60	08:29	01:45
Owner 9	196	12.86	2.50	8.28	10:52	184	15.80	2.90	9.60	09:22	01:29
Mine	176	12.60	2.20	7.28	12:21	177	15.99	2.82	9.34	09:38	02:42

This represents low voltage cases | TATA's EVSE providing less than rated current at low voltage cases | **https://t.me/svXPs** or search **@svxps** in telegram or search **#svXPs** in fb

TATA's EVSE providing less than rated current due to software power limitations (with sufficient voltage) | Special thanks to **Sibu (@sibusaman), VJ** and **all 9 owners**

Summary available in next image

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Better not to use modified 16A EVSE on cars that supports 7.2kW onboard charger.
If you are using 7.2kW/32A fixed EVSE, ensure recommended power wiring. If you are using 7.2kW/32A adjustable EVSE in 16A mode, better to use 16A MCB in the wiring.

Date	Start_SOC	End_SOC	Average_Voltage	Average_Current	Average_Power
2022-07-21	17	100	219.84	12.56	2.75
2022-07-22	19	100	215.9	12.56	2.7
2022-07-23	56	100	218.77	12.53	2.72
2022-07-24	39	100	219.57	12.57	2.75
2022-07-25	22	79	220.58	12.6	2.77
2022-07-26	27	100	221.36	12.54	2.76
2022-07-27	44	100	214.32	12.58	2.68
2022-07-28	83	100	214.61	12.48	2.66
2022-07-29	14	100	217.39	12.59	2.72
2022-07-30	31	100	218.46	12.57	2.73
2022-08-01	26	100	222.34	12.57	2.78
2022-08-02	31	100	224.2	12.54	2.8
2022-08-03	35	100	222.52	12.55	2.78
2022-08-04	35	100	225.95	11.85	2.66
2022-08-05	60	68	197.88	12.59	2.48
2022-08-05	4	100	227.85	11.64	2.63
2022-08-06	69	100	214.75	12.29	2.62
2022-08-07	58	100	229.49	11.58	2.64
2022-08-08	27	100	224.36	11.91	2.65
2022-08-09	70	100	212.68	12.46	2.63
2022-08-10	34	100	217.67	12.28	2.66
2022-08-11	32	100	220.34	12.1	2.65
2022-08-12	31	100	220.35	12.1	2.65
2022-08-13	86	100	212.68	12.33	2.6

Before Prime update

Using TATA supplied 13A EVSE
Please note it is not taking maximum rated current 13A (possibly power limited 2.68-2.8kW)

TATA, Thanks a lot for Prime update (Cruise control and Regen selection) but this is one issue which is enhanced with prime update (not yet cleared)

After Prime update

Using TATA supplied 13A EVSE
Please note it is not taking maximum rated current 13A (possibly power limited 2.6-2.68 kW)

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Date	Time	Voltage	Current	Power	Counter
2023-06-25	20:15:25	189.89	14.17	2.68	5
2023-06-25	20:15:55	188.93	14.26	2.68	6
2023-06-25	20:16:25	189.27	14.22	2.68	7
2023-06-25	20:16:55	186.88	14.45	2.69	8
2023-06-25	20:17:25	187.88	14.39	2.69	9
2023-06-25	20:17:55	187.88	14.37	2.69	10
2023-06-25	20:18:25	188.93	14.29	2.69	11
2023-06-25	20:18:55	188.52	14.35	2.69	12
2023-06-25	20:19:25	187.88	14.4	2.69	13
2023-06-25	20:20:39	187.85	15.55	2.91	1
2023-06-25	20:21:09	188.45	15.54	2.92	2
2023-06-25	20:21:39	188.57	15.55	2.92	3
2023-06-25	20:22:09	186.8	15.54	2.89	4
2023-06-25	20:22:39	184.41	15.54	2.86	5
2023-06-25	20:23:09	188.47	15.55	2.92	6
2023-06-25	20:23:39	188.55	15.54	2.92	7
2023-06-25	20:24:09	189.17	15.54	2.93	8
2023-06-25	20:24:39	187.57	15.55	2.91	9
2023-06-25	20:25:09	189.09	15.55	2.93	10
2023-06-25	20:25:39	191.76	15.56	2.97	11
2023-06-25	20:26:09	191.33	15.56	2.97	12
2023-06-25	20:26:39	191.74	15.56	2.97	13

MIDA 3.3kW/16A EVSE with default 680ohm PP resistor (default)

This clearly shows that it is a restriction inside EV and not EVSE
(680 ohm means upto 20A & 220 ohms means upto 32A)

Power is not reaching upto 3.2kW due to low voltage and current limit of the EVSE

MIDA 3.3kW/16A EVSE with default 220ohm PP resistor

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