

# **2T Technology**

## **Technical Support Note**

### **Current Supply Capability & its Relationship to GSM Signal Level.**

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## **Motivation**

Working in technical support we sometimes come across the following problem:

- A) An Installer has installed our GSM switch a number of times without a problem
- B) He is happy to use the switch and knows how simple it is to install.
- C) He has heard he doesn't need to use a power supply with the 2T Voyager switch so he powers the switch from the gate controller.
- D) Unfortunately today he is in contact with 2T tech support because he can not get this switch to register on the GSM network. He has even tried a few different network SIMs. SIMs that have also worked in the past, no problem. He is assuming, he must have a faulty GSM device.

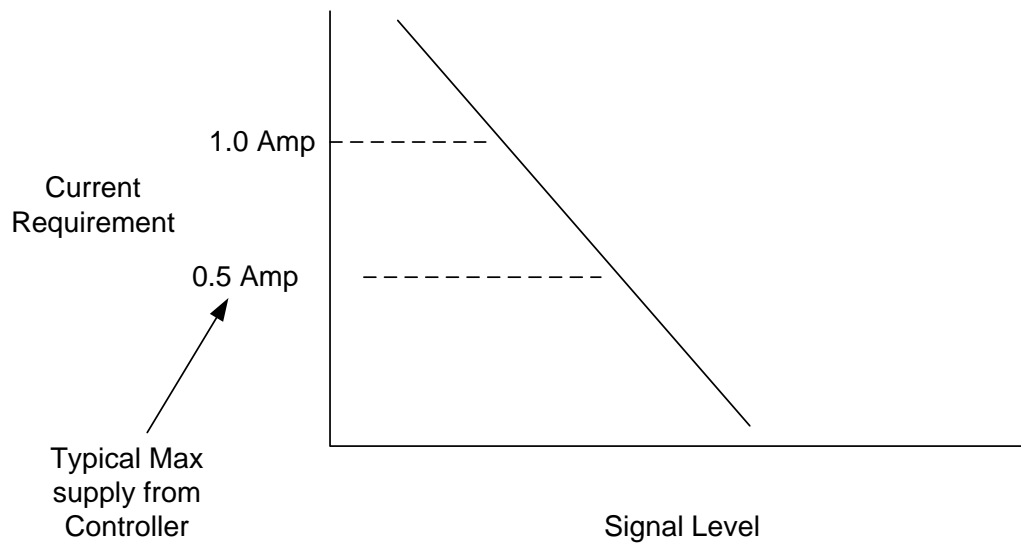
## **Introduction**

Although we live in a digital world many of the relationships existing in a GSM network and with GSM device setup, remain in the Analogue domain. Power supply capability, Signal Levels, voltage and current levels are all analogue factors. This Technical note outlines a little understood factor relating to GSM systems that explains the Installers problem described above.

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## GSM System Installation and the relationship between current and signal Level

It is a little understood fact about GSM Communications systems that the current required by the device is affected by the signal level available on site. The lower the signal level from the Network ( Vodafone, 3 etc..) the greater the current required by the device to register, make a call and send a text. Fig 1 below shows this inverse relationship.



**Fig 1: Current and Signal Level showing the inverse relationship for GSM Systems.**

So what happens is we get an Installer using say a FAAC controller providing 500mA of supply current. For the sake of this discussion pick a point on the horizontal axis matching the 0.5 Amp point on the vertical axis.

He is normally installing in a built up area, say a town or City. Everything is fine and he hasn't had any problems. Then he is installing on a site where signal level goes below that where a 500mA supply is sufficient (this is a signal level to the left of the point you picked above on the horizontal axis). The GSM unit won't register. Now he has a problem on something that always worked in the past.

Unfortunately it's not black and white with GSM systems, in this situation.

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He could try a different SIM card and it may provide better signal coverage in the install location. Now his 500mA is enough, and the GSM device may register. But he is likely to assume the original SIM was faulty.

PSU's and GSM communications systems still have many Analogue features and relationships.

Our Manuals state a requirement for 12/24V at 1 Amp minimum. This level of current is not always provided by the gate controller and as a result the problem above occurs.

Using a separate 12V 1Amp power supply ensures that the installer never needs to understand the details above.

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