Summary: This study guide will serve as a supporting document for the "Gas Detection" session of the ConsoliDator+ MasterClass. This will go over the exact same topics we reviewed but will go a bit deeper into the significance of each feature and why they make the ConsoliDator+ such a unique accessory for any Gas Detection application!

For visual guidance, please refer to the corresponding sections of the slide show that was included in the email you received immediately after the session ended.

Basic Gas Detection Screen: This screen is very basic, but it does present a lot of information in such a small space! On this screen we are monitoring the LEL of methane, we have a channel that is letting us know the status of the room, and we also have a channel that is showing us the 4-20 mA value coming from the sensor.

According to sources I found online, the LEL for Methane is 5% by volume. So, when the LEL reading gets to 5%, or more, we will get an alarm.

Well, technically, we may get three alarms, so let me explain!

When the LEL exceeds 5%, the bar graph on the left side will turn RED and flash, as will the channel on the right side of the screen.

Our "Room Condition" status will also turn RED and flash, and the wording will change from "Safe" to "RUN!!!!!" (again, custom units/words used here). Now, obviously this channel is a bit redundant, and may not be used in a real-life situation, but it's just to show you how flexible the ConsoliDator+ is, and all the different ways it can present critical process information to operators.

Lastly, our "Sensor Input" channel turns RED and flashes, but it gets a bit more interesting than that.

Here's my thinking…

Let's say you get an alarm for the LEL of Methane in the room. But, when you look at the mA value your sensor is outputting, it doesn't make sense that there would actually be an alarm. This could be a way to make sure you're not getting any false alarms.

Again, this may be a bit redundant, and it may not be useful in a real-life situation, but it shows you just how much information the ConsoliDator+ can display on its screens!

Common Alarms Screen: One of the most flexible features on the ConsoliDator+ is the ability to tie multiple alarms together, and actually have multiple channels share the same alarm relay!

I believe in the gas detection world this is called, "a common relay". In fact, this one feature was what got someone to try this unit out for gas detection when they were unable to quickly get the normal "transmitter" they use!

On this screen, we are looking at the readings from four different gas detectors. The last channel you'll see at the bottom (with no color) is a basic alarm status channel. In fact, it's not even a "Channel" (by ConsoliDator+ definition). I just added the "Alarm" object to the screen, and that's how it appears – more on that in later sessions!

The point of this screen is to show you how both of the "Propane" channels are tied to the same Alarm (or, the same relay). If the first channel goes high, the alarm will trigger. If the second channel goes high, the alarm will trigger. If BOTH channels go high, the alarm will trigger.

NOTE: *We can actually get a bit more fancy with combining channels with a single alarm. For example, we can actually have "NOT" alarms. Let's say in this example, I only want the alarm to trigger if Channel 1*

is high and Channel 2 is low. I can make that happen. Or vice versa! We will take a much closer look at the different alarm configurations in later sessions, but just keep in mind that "Alarms" on the ConsoliDator+ are much more than they appear at first glance.

Plant Overview: We are going to use the same concept we learned on the last screen and apply it to this "Plant Overview" screen.

Here's the situation…

The customer's plant is divided into four different "Zones". Let's say each "Zone" has four gas detectors in them. Well, the operator could spend their time looking through four different screens to see any alarms, and monitor the levels of the gases, or they could use our "Common Alarms" to help them out and make their lives easier.

All four gas detectors in each Zone are tied to a Common Alarm. That means no matter which gas detector senses a high level of gas in a Zone, an alarm will be tripped.

So, this screen is simply watching for those Common Alarms to trip.

When everything is fine, all the Zones are colored GREEN and they all say the word, "Safe".

However, when the Common Alarm in Zone 1 is triggered, the "Zone 1" channel on this screen will turn RED and begin flashing to alert the operator that there is an issue in Zone 1.

Now, they could use the arrow keys at the bottom of the screen (default soft key configuration on all units) to cycle through all their screens until they find Zone 1, but that could take some time.

To make things MUCH simpler for the operator, we can actually program those soft keys to jump to specific screens. In this example, the "F4" soft key is programmed to jump to "Screen 2". Screen 2 happens to be the "Common Relays" screen we looked at previously.

However, if this were a real-life situation, you could see how useful a soft key like that could be if you have more than three screens configured on your ConsoliDator+ unit!

In real life, you could easily make each of the soft keys (F1-F4; Menu cannot be assigned to anything else) jump to a corresponding Zone!

NOTE: *As a reminder, you can have as many as 8 "objects" on a single screen. The main reason for keeping it to four in this session is for simplicity's sake. Also, numbers and words appear much larger with less information on the screen, so in my opinion it looks more aesthetically pleasing.*

BONUS MATERIAL

Part Number Legend: After our first session, a lot of you filled out the Post Presentation Survey which was GREALY appreciated, and I got a lot of great constructive criticism!

A few of you had asked me to go over how the model numbers of the ConsoliDator+ are configured, and how the pricing is structured.

Let's start with how the model numbers are configured.

NO matter what, every Precision Digital part number will begin with the prefix, "PD" (can you guess what that stands for?!?)

The ConsoliDator+ is actually the "PD9000 Series", so no matter which ConsoliDator+ unit you want, it will ALWAYS, no matter what, begin with, "PD9000-".

After that, we have a "GP".

Now, there is a long story and short story about this prefix, but we'll keep it short here. The "GP" stands for "General Purpose" – in regard to area classification (*before you ask, yes, we are in the process of getting hazardous area approvals on the ConsoliDator+, but unfortunately, I cannot provide a release date at this time*).

Again, no matter what, as of TODAY, every single ConsoliDator+ unit will begin with:

PD9000-GP-

After that, we begin including the different I/O options into the part number, and they will always appear in the exact same order. The order of I/O in the part number is as follows:

Pulse Inputs (PI)
Analog Inputs (AI)
Analog Outputs (AO)
Relays (RY)
Ethernet (E)

If a particular model does NOT include any of the above I/O items, the term is removed from the part number all together.

Here is a simple example. Let's say I want a ConsoliDator+ that has 8 analog inputs, 5 analog outputs, and 10 relays. My part number would be: **PD9000-GP-8AI-5AO-10RY**

You will notice that two of the model number components are omitted from the above example. Because the unit does not have pulse inputs or the Ethernet add-on, they are not included in the model number at all!

So, let's say I actually wanted to add Ethernet to that ConsoliDator+. Well, my new part number would change only very slightly, and it would be: **PD9000-GP-8AI-5AO-10RY-E**

One last example!

Let's say I decide to keep the Ethernet, but I really don't need the relays. In fact, I HATE relays and just cannot stand to have them anywhere near me. My new part number would be:

PD9000-GP-8AI-5AO-E

That's it! If I don't want relays on my unit, I simply drop that component from the model number completely, and I will receive a ConsoliDator+ with 8 analog inputs, 5 analog outputs, and Ethernet capabilities.

ConsoliDator+ Pricing: Unlike our legacy products, pricing can get a bit tricky with the ConsoliDator+ since there are just so many possible configurations of I/O cards. You will notice on our website that we have several "Standard" part numbers for the ConsoliDator+. This is just a way for us to have pricing on the website, and they are the configurations that are most popular anyway.

However, in reality, there are a ton of configurations that are possible (around 705,894 – to be exact) and it would be impossible for us to capture all of those on the website, and therefore, to come up with a comprehensive price list.

So, here is how I usually explain the pricing to folks.

The base unit (PD9000-GP) is priced at $1,700.00 USD.

A fully populated unit (PD9000-GP-28AI-E) is priced at $5,525.00 USD

The rest of the pricing falls somewhere in between those two numbers, and it depends heavily on which option cards (I/O cards) the customer wants.

Each option card can be sold separately and added on to any ConsoliDator+ at a later time (assuming the unit still has available slots. Keep in mind, the unit only has 7 available slots to fill).

That also means that each option card has its own price!

So, if you REALLY wanted to, you could use the pricing for the base model ($1,700 USD) and just add the price of each option card that a customer wants, and you can figure out the pricing on your own!

NOTE: This ONLY works for “Standard” model numbers that are listed on the website. If you have a configuration that is considered “Custom”, you must add $250.00 USD to the final price.

Below are the part numbers, description, and price of each option card that can be purchased for the ConsoliDator+:

PDA9000-C4PI – Pulse Input option card (4 inputs per card) $410.00 USD

PDA9000-C4AI – Analog Input option card (4 inputs per card) $475.00 USD

PDA9000-C5AO – Analog Output option card (5 outputs per card) $410.00 USD

PDA9000-C5RY – Relay Output option card (5 outputs per card) $175.00 USD

While we are talking about prices and accessories, please take a minute and look at all the great accessories we have for the ConsoliDator+. From a Sun Hood to a Light/Horn Beacon and Enclosures, the ConsoliDator+ has an accessory for almost any occasion – yes, even for a night on the town!

As with any of the sessions we have had, there are a ton of other great features that could be used for Gas Detection, but for the sake of time, I had to choose the BEST features to demonstrate for you. With the flexibility of being able to combine alarms, and have multiple channels share the same relay, the ConsoliDator+ would really make a great Gas Detection accessory!

If you are heavily involved in the Gas Detection world, you could also check out another one of our products that is actually used quite often in Gas Detection since it has such a GIANT display that can be seen from up to 100 feet away – even in direct sunlight!

Our Helios Series was introduced about 4 years ago, and it has ALL the same great features of our flagship product, the ProVu, but is housed in a fully sealed NEMA 4X field mount enclosure with 1.8” tall digits!

Next week, for week 4, we will take a look at some other popular applications we have yet to go over. Since they are so common, it would be hard to dedicate an entire session to each of them, so next week we will see how the ConsoliDator+ can be used in the following applications:

Pressure, Temperature, Speed/Tachometer, pH/Analytical, and take a closer look at the different “tricks” we can do with the alarms, similar to what we saw today!

Sincerely,

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