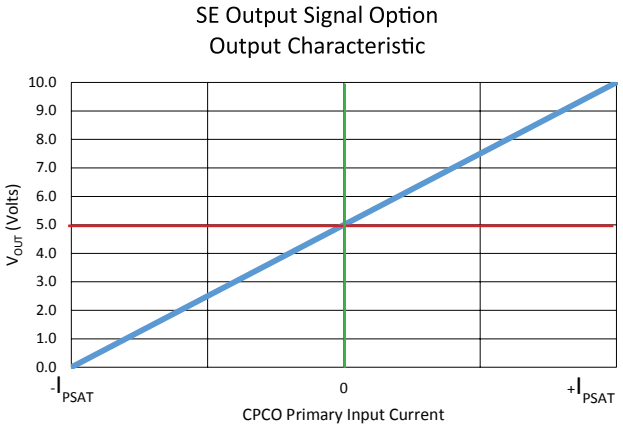
SIGNAL OUTPUT OPTIONS:

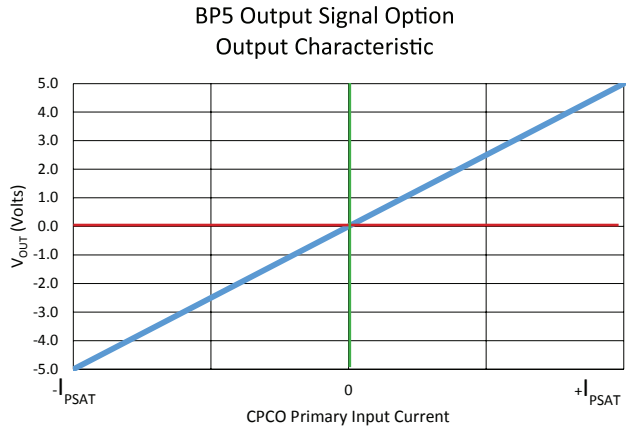
SE Option - The SE stands for Single Ended and the output voltage from the CPCO will have a quiescent outpu voltage of 5.0V when there is no primary current (I_{PRI}=0A As the primary current (I_{PRI}) increases in a positive direction, the output voltage will increase to the maximun level of 10.0V at $I_{PRI}=I_{PSAT}$. When the primary current increases in the negative direction, the output voltage will decrease toward 0.0V at $I_{PRI}=-I_{PSAT}$

This option is useful for applications that drive circuitry that can only accommodate positive signal input voltages such as inputs to A/D's



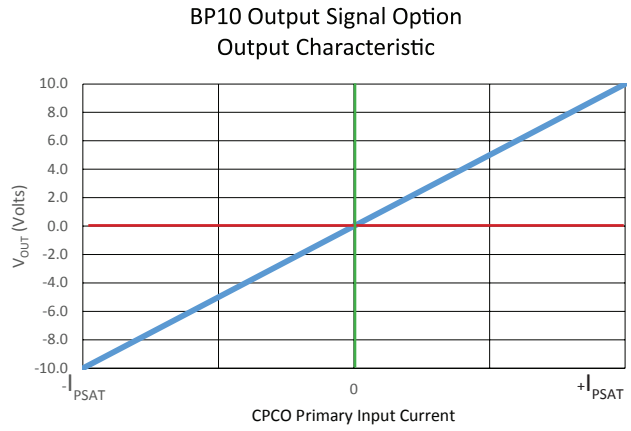
BP5 Option - The BP stands for Bi Polar and the output voltage from the CPCO will have a quiescent output voltage of 0.0V when there is no primary current (I_{PRI}=0A) As the primary current (I_{PRI}) increases in a positive direction, the output voltage will increase to the maximum level of 5.0V at $I_{PRI}=I_{PSAT}$. When the primary current increases in the negative direction, the output voltage will decrease toward -5.0V at $I_{PRI}=-I_{PSAT}$

This option is useful for applications that drive circuitry that can accommodate Bi Polar signal inputs that swing around Com (0.0V) such as oscilloscopes, data loggers. multi-meters, etc.



BP10 Option - The BP stands for Bi Polar and the output voltage from the CPCO will have a quiescent output voltage of 0.0V when there is no primary current (I_{PRI}=0A) As the primary current (I_{PRI}) increases in a positive direction, the output voltage will increase to the maximum level of 10.0V at $I_{PRI}=I_{PSAT}$. When the primary current increases in the negative direction, the output voltage will decrease toward -10.0V at $I_{PRI}=-I_{PSAT}$.

This option is useful for applications that drive circuitry that need higher voltages and can accommodate Bi Polar signal inputs that swing around Com (0.0V) such as oscilloscopes, data loggers. multi-meters, etc.

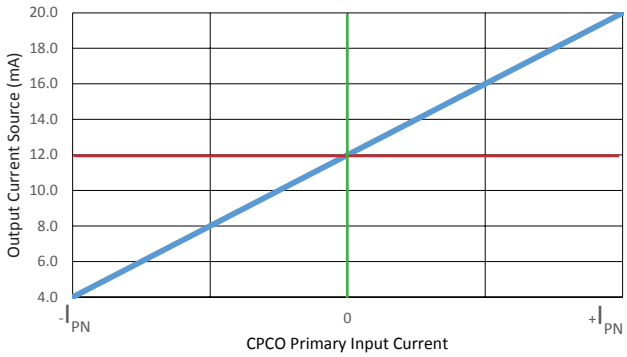


Revision Date: 29OCT2015 rev2

OUTPUT OPTIONS CONTINUED:

MA Option - The MA stands for Milli-Amp and the output from the CPCO will be a current source ranging from 4mA to 20mA. There is a quiescent output current source of 12mA when there is no primary current (I_{PRI}=0A). As the primary current (I_{PRI}) increases in a positive direction, the output current source will increase to the maximum level of 20.0mA at I_{PRI}=I_{PN}. When the primary current increases in the negative direction, the output current source will decrease toward 4mA at I_{PRI}=-I_{PN}. The output current comes from the input power supply, therefore the CPCO power supply must be capable of providing the CPCO circuit of approx 50mA plus the output source current of up to 20mA.

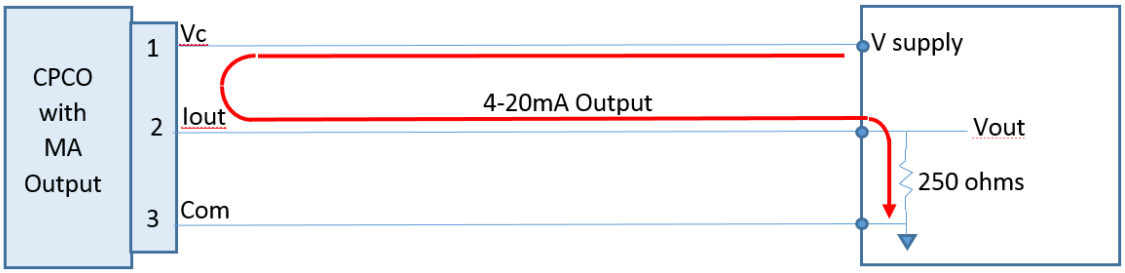
MA Output Signal Option
Output Characteristic



This option is applicable to standard 4-20mA circuit configurations and is recommended in electrically noisy environments with long cable runs. The 4-20mA current source output is very common with PLC's. Offset errors that can result from long cables are eliminated with the MA version.

Typical MA option circuit diagram.

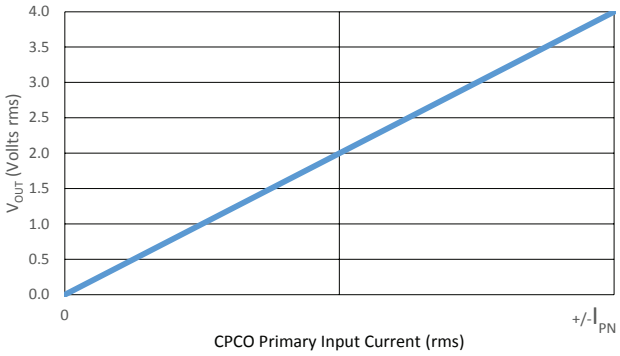
The 4-20mA current source flows from the PLC power supply, for example, to the CPCO and then back to the PLC, 4-20mA input. The typical PLC input load resistor is 250ohm. With a 250ohm resistor, the voltage across the resistor will be: V_{OUT}=I source * R (example: at 12mA the V_{OUT} =3.00V)



RMS Option - The RMS stands for **R**oot **M**ean **S**quare and the output voltage from the CPCO will have a quiescent output voltage of 0.0V when there is no primary current (I_{PRI}=0A). As the primary current (I_{PRI}) increases in a positive direction, the output voltage will increase to the maximum level of 4.00V at I_{PRI}=I_{PN}. When the primary current increases in the negative direction, the output voltage will increase toward 4.00V at I_{PRI}=-I_{PN}. The output is an analog voltage that is proportional to the RMS value of the primary current over the complete specified BW of the primary current.

This option is useful for applications that drive circuitry that need the RMS value only.

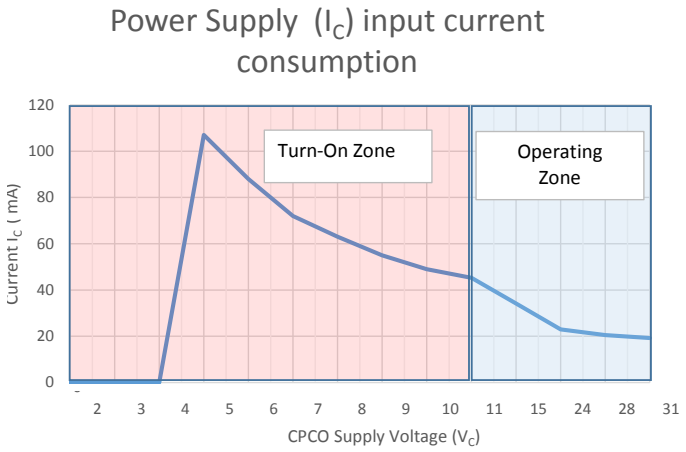
RMS output Signal Option
Output characteristic



Revision Date: 29OCT2015 rev2

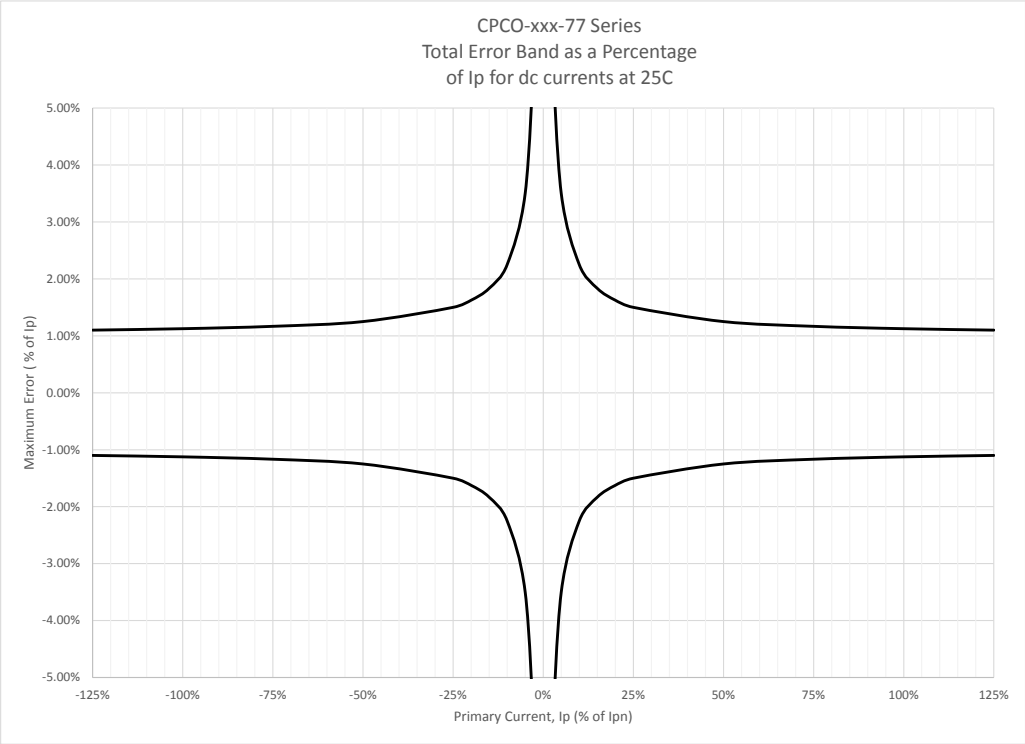
POWER SUPPLY INPUT CURRENT:

The CPCO incorporates a switching power supply to convert the input power to the internal low operating voltage and reduce the internal power dissipation. The power consumption is relatively constant, therefore the input current is inversely proportional to supply voltage, V_C. The max current is specified to be 47mA once the input voltage reaches the normal operating range of 11-31V, however during turn-on the current required is higher. See the graph for the power current required. The power supply used to operate the CPCO, must have at least 150mA capability otherwise the CPCO will not turn on.



TOTAL ERROR BAND

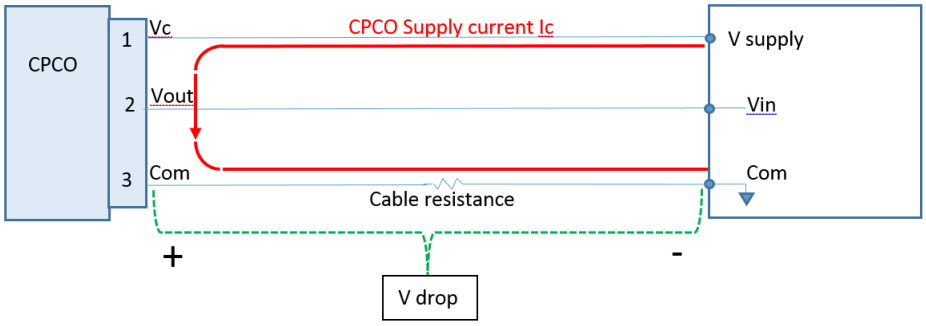
The absolute accuracy for the CPCO series is represented by the Total Error Band plot. The Error plot is the same for all the CPCO-xxxx-77-YY configurations. The current is shown in % of I_{PN} (Primary Current, Nominal. The majority of the Error is due to CPCO output offset (V_{OE} or I_{OE}) at these lower I_p values.



Revision Date: 29OCT2015 rev2

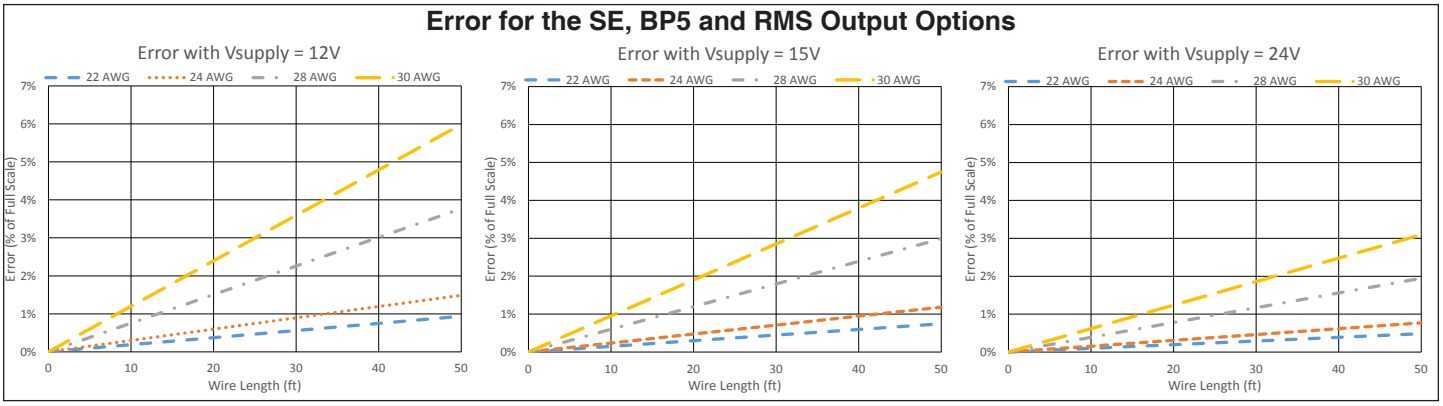
OFFSET ERROR CAUSED BY CABLE RESISTANCE/LENGTH:

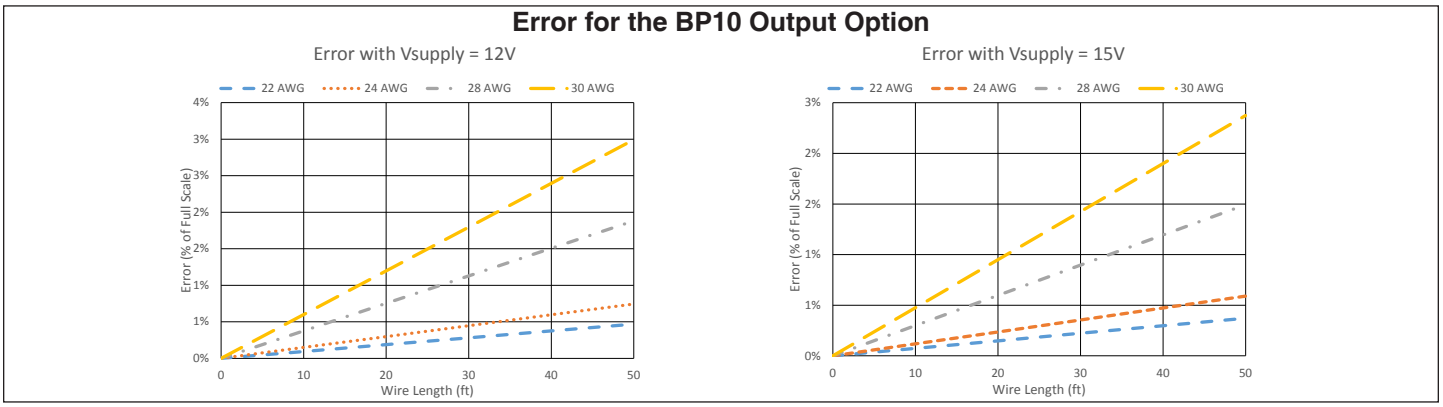
If the power supply return and signal return share a common wire, any voltage drop caused by the supply current, I_C, will be added to the output signal voltage level.



The amount of error voltage added to the offset voltage will be dependent on the cable length, wire gauge and operating voltage. The operating voltage affects the I_C current level as shown above.

Offset voltage error (mV) = I_C (mA) * wire resistance (milli-ohms/ft) * cable length (ft)
% Offset error = (OS voltage error/Full Scale output range (mV))*100%



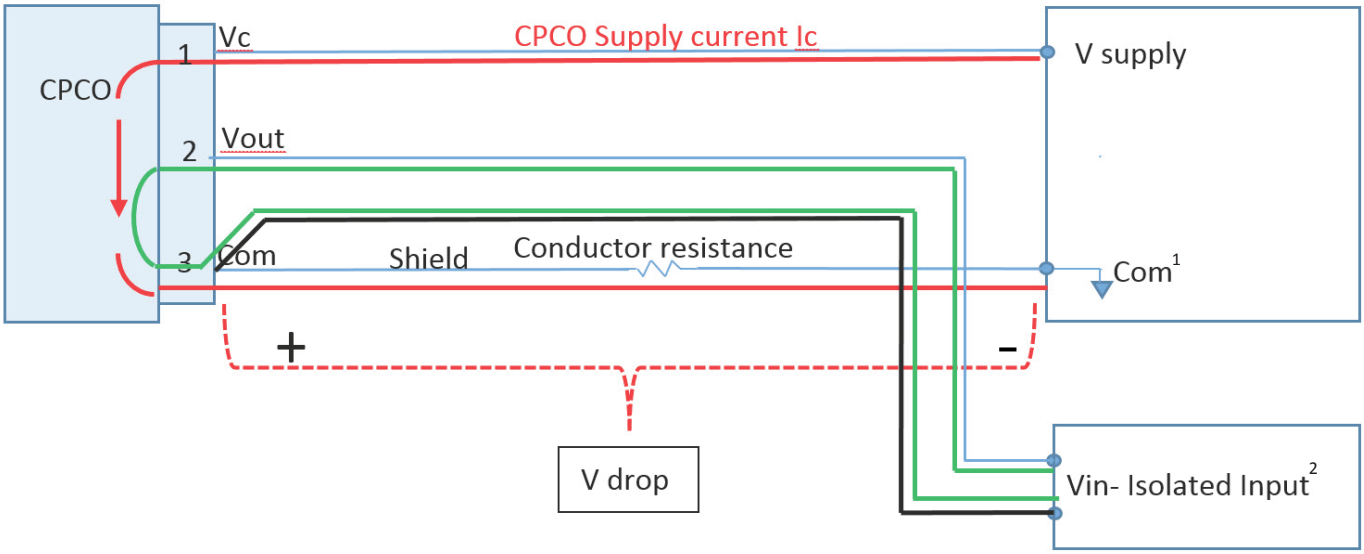


For the **MA Output option,** the current source is independent of the wire size and return lead, therefore there is no offset errors from the cable type or length.

Revision Date: 29OCT2015 rev2

FOUR WIRE HOOKUP WITH AN ISOLATED INPUT INSTRUMENT:

Four Wire hookup with an isolated input instrument. The effect of error voltage on the cable return can be minimized by using a four wire connection and an isolated input instrument. The current flowing in the signal path (GREEN) is in the micro amps, therefore there is negligible voltage drop across the return lead. The cable accessory (1700-2153-0) has three leads plus a shield. With this cable, the shield can be used as the power return line and the black lead as the signal return (GREEN path) for the isolated input provided it is not connected to the power supply ground (COM).



[1] This terminal may be connected to signalor safety ground.
[2] These terminals must be isolated from ground.