This document set is applicable to the following part number configurations:

Clock, outside and carburetor air temperature systems

Part Number	Kit Configuration	
	Instrument	**Sensor**
CO200C	CO200C	-
CO200CK	CO200C	1 X A200-TSA 1 X A200-TSC

CO200CX Clock, Outside and Carburetor Air Temperature

THIS IS A TRANSPORT CANADA APPROVED MANUAL

The following checklist outlines the required articles for all CO200CX series part numbers.

	Documentation	Document Number
☐	Introduction (this document)	S200-CO200CX-001
☐	Warranty Statement	S200-AWS
☐	Installation Instructions	S200-CO200X-002
☐	Intensity Control Installation Options	S200-DDC-INST
☐	Wiring and Installation Schematic	S200-CO200CX-003
☐	Human Interface Definition	S200-HID
☐	Instrument Setup	S200-CO200X-004
☐	Operations Guide	S200-CO200CX-005
☐	Product Specifications	S200-CO200CX-006
☐	Installation Compliance	S200-CO200X-007
☐	Instructions for Continued Airworthiness	S200-ICA
☐	Authorized Release Certificate	FORM ONE
☐	Permission to Use STC	S200-PTU
☐	Canadian STC and Eligibility List	STC & S200-CEL
☐	FAA STC and Approved Model List	STC & S200-AML

Components

☐ CO200C Instrument

☐ A200-TSA Outside Air Temperature Sensor

☐ A200-TSC Carburetor Air Temperature Sensor

☐ 4 X Mounting Screws

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CO200CX Clock, Outside and Carburetor Air Temperature

The Fastest Way To Install And Start Using This Product

NOTE: This product is certified as a primary replacement, new or secondary instrument only when installation is performed in accordance with the documented instructions and procedures.

1. Review the Warranty Statement before performing any tasks. Do not remove the instrument from the sealed package until you agree with the stated terms.

2. If this instrument is to be installed in a certified aircraft, verify that the aircraft model is listed on the Eligibility List (Canadian registered aircraft) or the Approved Model List (USA and all other countries).

   If it is NOT listed, contact your local authority and obtain the necessary requirements or approvals before proceeding further.

   For all other vehicles, including experimental aircraft continue with Step 3.

3. Follow the Installation Instructions exactly as noted, referring to the Wiring Diagram as and when required. Note: The installation process has been optimized based on the sequence of components to be installed. Installing the product in any other way will, in all likelihood, take longer and be more complex.

   Ensure that **one** of the Intensity Control options has been installed in accordance with document # S200-DDC-INST.

4. Perform the Instrument Setup using the required data as listed in the Instrument Setup procedure.

5. Validate that all functions perform as outlined in the Operations Guide.

6. Complete all regulatory documentation, if required.

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NO NONSENSE WARRANTY

Our warranty policy is simple …. It is even written in plain English!

Please read it BEFORE DOING ANYTHING WITH YOUR NEW INSTRUMENT!

If you require technical support when installing your instrument please call our Technical Support department directly on
416-628-0725

We will:

- Repair or replace (at our discretion) any instrument which becomes defective within a period of 12 (twelve) months of manufacture date. You will pay for the shipping costs to return the instrument to us and we will pay for the shipping costs to return the instrument to you;

- Replace all instruments that fail out of warranty for a flat rate of 50% of the cost of a new instrument, at the time of the failure.

We are not:

- Liable for any costs associated with the installation or removal of any of our instruments, irrespective of the cause;

- Liable for any misuse or non-use of the instrument in whatever form.

We will not:

- Repair or replace your instrument free of charge, under warranty, if it has not been installed by an appropriately licensed person.

If you do not agree with ANY of the above statements, return your new instrument to us immediately for a FULL refund LESS shipping costs.

ALL RETURNS REQUIRE RETURN MATERIAL AUHORIZATIONS (RMA). WE DO NOT ACCEPT RETURNS WITHOUT RMA NUMBERS. CALL 416-628-0725 FOR AUTHORIZATION.

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CO200X Installation Instructions

1. Install senders in accordance with the manufacturer supplied instructions:
    a. Install outside air temperature sender P/N A200-TSA, and
    b. Carburetor air temperature sender P/N A200-TSC, only with **CO200CX**.

2. Connect the wiring supplied with the DB25 interface connector in accordance with the CO200X Wiring and Installation Schematic. **DO NOT ATTACH THE CONNECTOR TO THE INSTRUMENT UNTIL ALL WIRING HAS BEEN CONNECTED.**

3. Select the instrument location in the aircraft panel.

4. Ensure that the aircraft master switch and/or power to the instrument is **OFF**.

5. Attach the DB25 connector to the instrument. Ensure that the plug is fully inserted into the instrument. Finger tighten the two plug locking screws, then tighten 1/8 turn using a screwdriver. **DO NOT OVERTIGHTEN.**

6. The instrument can be installed with the DB25 connector orientated to the **TOP or BOTTOM** of the instrument panel.

7. Install the instrument in the panel, attaching with four 6-32 X 5/16" screws.

8. Initial Power Up Sequence:

    a. Adjust the instrument intensity control for maximum intensity.
    b. Apply power to the instrument.
    c. The instrument display will light up.
    d. The display may be inverted at this point. Ignore the orientation at this time.
    e. Turn the instrument **OFF**.

9. If the instrument display does not light up:

    a. Ensure intensity control is set for maximum.
    b. Turn off power.
    c. Disconnect the DB25 connector from the instrument.
    d. Check intensity control.
    e. Check the wiring installation and breaker or fuse.

10. Proceed to "Instrument Setup".

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Intensity Control – Installation Options
## Applicable to Rev 05 and later 200 Series Instruments

Choose ONE of the options listed below for connection of the BLUE intensity control wire from the instrument harness.

Theory of Operation

- The instrument intensity control is voltage sensitive.
- When the sense input is grounded the instrument display will be at the dimmest intensity. At bus voltage the instrument display will be at the brightest intensity.
- Voltages between these two will vary the display intensity.

1. Preferred Method – Independent Potentiometer

Connect the BLUE wire to P/N A200-POT Rev. 02 as below:
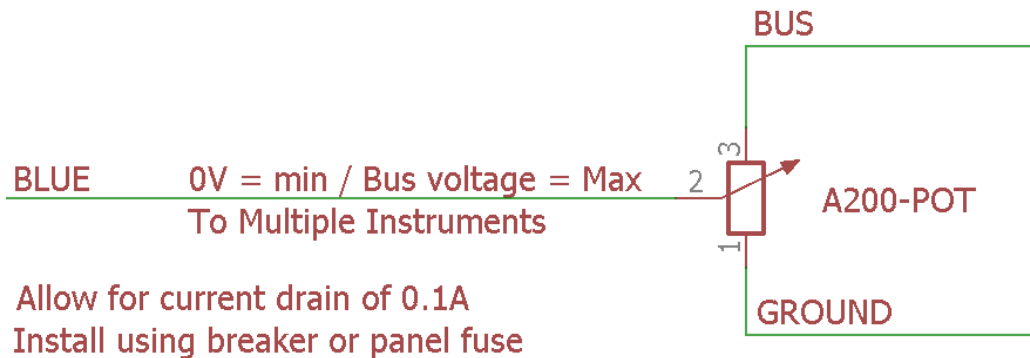
Ensure the "EXTERNAL" option in the Dimmer Control menu is set.

2. Connection of Existing Panel Intensity Control

Confirm the existing panel lighting control meets the following requirements:

- When set for **DAY** operation **BUS** voltage must be output.
- When used at **NIGHT** the output must vary from **0V** (Ground) to **BUS** voltage**.**

If these requirements are met connect the BLUE wire to the panel lighting control.

Ensure the "EXTERNAL" option in the Dimmer Control menu is set.

3. Day VFR Operation

Do not connect the BLUE wire. Set the intensity using the internal Dimmer Control.

Refer to document S200-HID, Intensity Control section for menu access instructions.

COLOR	DESCRIPTION
RED	6V - 36V SUPPLY (SWITCHED)
BLACK	GROUND
BLUE	0V-BUS VOLTAGE - VARIABLE INTENSITY INPUT *
WHITE	6V - 36V SUPPLY (ALWAYS ON)

CO200C INSTRUMENT

DB25 CONNECTOR

TWISTED SET (R/B/Y)
TAG OAT

COLOR	CONNECT TO
RED	OAT SENSOR RED (5V)
BLACK	OAT SENSOR BLACK (GROUND)
YELLOW	OAT SENSOR YELLOW (ANALOG OUT)

TWISTED SET (R/B/Y)
TAG CARB

COLOR	CONNECT TO
RED	CARB SENSOR RED (5V)
BLACK	CARB SENSOR BLACK (GROUND)
YELLOW	CARB SENSOR YELLOW (ANALOG OUT)

INSTALLATION NOTES:

1. Allow for current drain of 0.1A (100mA)

2. Install using breaker or panel fuse

3. Maximum 7 instruments per 1A of breaker capacity

4. For multiple instrument installations install breakers to comply with redundancy requirements of AC 23.1309-1D Appendix 1

ACCESSORY NOTES:

1. * See S200-DDC-INST for additional intensity control options

2. For OAT use sensor P/N A200-TSA

3. For carburetor temperature use sensor P/N A200-TSC

CO200CX Wiring and Installation Schematic

S200-CO200CX-003 Rev 1.0 07/20/2018

200 Series Human Interface Definition

All 200 Series instruments have been designed around a standard Human Interface protocol. This allows identical operation of the two panel switches between all instruments while still allowing multiple functions. This document is a generic outline of the functionality of the switches, based on the various functional states of the instrument.

Top Button

The top button is the action button. It invokes different screen displays, allows selection of values and increments or decrements values. Examples of these actions are:

1. Moving between display screens
2. Selection of an action from a menu
3. Changing a value from within the setup menus
4. Entering a value during flight (clock instrument only)

Bottom Button

The bottom button is the navigation button. It will allow the cursor on the screen to move between allowable selections. Examples of these actions are:

1. Selection of different cylinders (EGT and CHT) in the Single Cylinder mode
2. Selection of different tanks (Fuel Level)
3. Selection of limits and functional items from within the setup menus
4. Time field selection (clock instrument only)

There is one exception to the functionality of the bottom button. This is from the Primary Display (the screen that first comes on from power up). Pressing the button will display the instrument core status and support data.

General

1. Each instrument contains detailed button options in the Operations Guide.
2. During setup, instructions are provided on screen and use of the buttons is as noted in this document.

Intensity Control

Press and hold the top button for 5 seconds to activate the Dimmer Control menu.

Select the "Up Arrow" and press the top button to disable external intensity and increase intensity. Select the "Down Arrow" and press the top button to decrease the intensity and enable external intensity control.

Select the "Save" option and press the top button to save your selection and return to normal operations.

The Dimmer Control menu is not available during instrument setup.

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CO200X Instrument Setup

1. Enter the setup as indicated below:

   a. Turn off the power to the instrument

   b. Press and hold both top and bottom buttons and turn on the power to the instrument.

   c. When instructed, release both buttons.

   d. In the setup menus, use the bottom button to navigate and the top button to select an option.

   e. ***NOTE: Depending on the installation orientation of the instrument the display may initially be upside down. The first prompt in the setup is to press the button at the top of the instrument. This will orientate it correctly.***

2. Set the correct UTC time.

3. Set the desired time display, 12/24 hour mode.

4. Set the temperature units, ⁰F or ⁰C.

5. Once all steps of the setup have been completed, the instrument will provide the option to edit any data or to save and exit.

6. If the data entered is correct, choose the "OK" option to save the data and exit setup, otherwise choose "EDIT".

7. Once the instrument has exited the setup it will restart. It is now ready for use.

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CO200CX Operations Guide

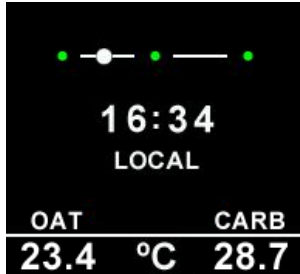This manual outlines the operating procedures for all CO200CX series products

1. **Power Up UTC Time / Default Screen**
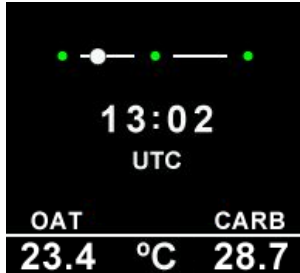
Displays UTC time and seconds on the minute progress bar. The Outside Air Temperature and Carburetor Air Temperature are at the bottom of the instrument.

Press the top button to move to the next display screen (#2).

2. **Local Time**

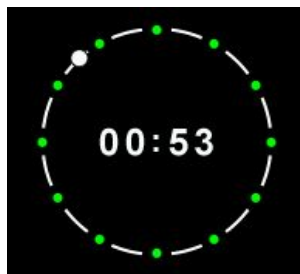The local time is displayed based upon the selected UTC offset.

Press the top button for the next screen (#3), OR

To change or set the UTC offset, press the bottom button and follow the onscreen instructions to set the offset. Use the bottom button to navigate and the top button to set.

Select [DONE] to return to the local time display.

3. **Chronograph / Down Counter**

A value will be displayed on the chronograph display and the seconds indicator will move at a one second rate.

To set the down counter value, press the bottom button and follow the onscreen instructions.

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CO200CX Operations Guide

Once the desired value has been set, select the [START] option at the desired start point of the timer.

The chronograph will continue to run even when the user navigates away from the screen. When 10 seconds remain on the down timer, the timer will take control of the current instrument activity and return the instrument to the chronograph screen for the final 10 seconds of the count.
NOTE: The Dimmer Control menu is not available when the down timer is running.

Press the top button to move to the next display screen (#4).

4. **Flight Time Display / Interval Timer**

Displays the current flight time and the current value of the interval timer.

This screen will timeout after the blue progress bar expires and will return to the default screen.

To return to the default screen press the top button or wait for the progress timeout.

To restart the flight time or set the interval timer, press the bottom button.
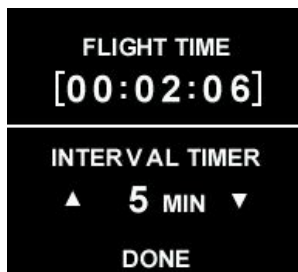
Then use the bottom button to navigate to the function of choice.

To reset the flight timer, select the time value field and press the top button. The text [RESET] will appear beneath the FLIGHT TIME header.

Press the top button again to reset the timer and restart.

To set the interval timer, select the appropriate interval time (minutes) by navigating to the increment or decrement selectors with the bottom button. Then press the top button to change the values.

Once the correct value has been selected, navigate to the [DONE] option with the bottom button and select with the top button.
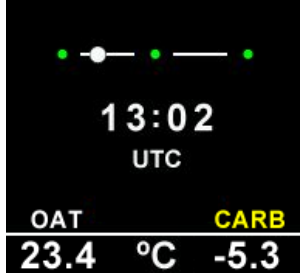
At the time of the interval period, the interval timer notification will be displayed on the top right in a green box. The value in the box is the minute value of the interval.

The timer will flash for 20 seconds before continuing to wait for the next period.

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5. **Carburetor Air Temperature**

The CARB label on the bottom of the screen will turn yellow when carburetor air temperatures are in the potential carb icing zone.

The yellow zone is from -15 ºC to 5 ºC, or 5 ºF to 41 ºF. Keep the CARB label out of the yellow zone during possible carburetor icing conditions.

6. **Other Options**

To display the instrument serial number and core information press and hold the bottom button when in the default screen.

WARNING

All flight operations are to be performed in accordance with the specific instructions pertaining to your aircraft, including those provided by the engine manufacturer. The CO200X series instruments are only parameter reporting devices which can assist in flight management when used in conjunction with these instructions.

All CO200X products are certified as primary replacements, within the limits as described above, or for secondary use as desired.

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CO200CX Product Specifications

Certification / Compliance
TSO   C43c
Environmental   DO-160F
          A1CAASXXXXXXZBXXBBBCSBA1C11XXAX
Software   DO-178B

DC Power Source   Input voltage   6 to 36 VDC
          Power consumption 100mA
          Power consumption – timer 3.0uA
          Load dump tolerance +60V
          Direct spike tolerance +/- 60V
          Cable spike tolerance > +/- 1KV

Operating Temperature Constant operating -15ºC to +55ºC
          Short term operating (1hr) -40ºC to +70ºC
          Storage   -55ºC to +85ºC

Signal Input   Temperature 0.0V to 3.0V

Display   Temperature   -50ºC to 150ºC
          Time   12/24 hour mode

Accuracy   Temperature SAE AS8005 Class IIa +/- 1% FS
          Clock   3.5ppm / < 2minutes/year

Display Units   ºF or ºC, user selectable

Display   Sunlight readable LCD
          80/80/80/80 Degree viewing angle

Interface Connector DB-25

Software Functionality
Primary   Time – UTC and Local, Outside and Carb Air Temp
Chronograph   99 minutes 59 seconds
Flight Timer   99 hours 59 minutes 59 seconds
Interval Timer   Set for multiples of 1 minute

Dimensions   2.45" X 2.45" X 0.9"

Weight (excluding harness) 4.05 oz

Finish   Black anodized 6061 aluminum

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CO200X Installation Compliance

1. **Installation Procedures and Limitations**

   Should your specific aircraft not be listed on our STC Approved Model List (AML), contact your local FSDO or flight authority for installation requirements **BEFORE commencing any installation tasks.**

   Installation must be in accordance with the following CO200X published documents:

   a. Installation Instructions,
   b. Wiring and Installation Schematic, and
   c. Instrument Setup.

2. **Installation Location and Visibility**

   The products are to be installed in existing panel holes and will replace existing instrumentation. As primary replacement products it is recommended and preferred that they be placed in the same panel location as the original equipment. Their visibility and placement relative to other instruments are the same or similar to the existing instruments. Where they are installed in a different location it is the responsibility of the installer to ensure that they are visible to the pilot under all conditions.

3. **TSO COMPLIANCE NOTICE**

   The conditions and tests required for TSO approval of this instrument are minimum performance standards. Those installing this instrument on or in a specific type or class of aircraft, must determine that the aircraft installation conditions are within the TSO standards. TSO articles must have separate approval for installation in an aircraft. The instrument may be installed only according to 14 CFR part 43 or the applicable airworthiness requirement.

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