

# SARS-CoV-2 Multiplex RT-qPCR Detection Kit (SCVMPD) Catalog #RU7048 100 tests

### **Product Description**

Coronaviruses are a family of large RNA viruses with size ranging from 26 to 32 kb. These viruses are zoonotic and in human can cause respiratory infections. As the coronavirus is an RNA virus it has a relatively high mutation rate resulting in rapid evolution. In December 2019, a new deadly coronavirus known as SARS-CoV-2 (previously known as 2019-nCoV), which has a high sequence similarity to SARS-CoV, was identified and has caused a disease, known as Covid-19, outbreak in Wuhan, China and spread globally.

ScienCell's SARS-CoV-2 Multiplex RT-qPCR Detection Kit (SCVMPD) is designed to detect the presence of SARS-CoV-2 Coronavirus in respiratory specimens and serum samples. The multiplex primer/probe sets component (Cat #7048-MPP) contains 3 primer/probe sets, N1-FAM, N2-FAM, and RP-HEX. Among them, N1-FAM and N2-FAM target two regions on

Primer/probe set	Primer/probe target gene	Probe Reporter Dye
N1-FAM	SARS-CoV-2 nucleocapsid (N) gene	FAM
N2-FAM	SARS-CoV-2 nucleocapsid (N) gene	FAM
RP-HEX	Human RPP30 gene	HEX

coronavirus SARS-CoV-2 nucleocapsid (N) gene. RP-HEX targets the exon 1 of human RPP30 gene and serves as a control to assess specimen quality. In addition, a non-infectious positive control (Cat #7048-Pos) and nuclease-free water (Cat #7048-H2O) are included in the kit. The positive control (Cat #7048-Pos) consists of non-infectious viral RNA fragments spiked into human small airway epithelial cells and serves to ensure reagents and instruments are working properly. Please refer to Tables 4 and 5 for results interpretation.

#### **Kit Components**

Cat #	Component	Quantity	Storage
MB802a2	One-Step TaqProbe RT-qPCR master mix, 4x	600 µL	-20°C
7048-MPP	Multiplex primer/probe sets, in solution	600 µL	-20°C
7048-H2O	Nuclease-free H <sub>2</sub> O	4 mL	4°C
7048-Pos	Positive control (non-infectious; RNA: 500 – 1000 copies/µL, cells: 200 – 300 counts/µL)	50 µL	-80°C

Component	Recommended
RNA samples	Customers' samples
Viral RNA isolation kit	ScienCell Viral RNA Isolation Kit (ScienCell, Cat #MB891)
qPCR plate or tube	

### Additional Materials Required (Materials Not Included in Kit)

### **Quality Control**

The primer/probe sets and the positive control are validated by RT-qPCR. The PCR products are analyzed by gel electrophoresis.

### **Product Use**

### For Research Use Only. Not for use in diagnostic procedures.

### **Shipping and Storage**

The product is shipped on dry ice. Upon receipt, store the One-Step TaqProbe RT-qPCR master mix (Cat #MB802a2) and Multiplex primer/probe sets (Cat #7048-MPP) at -20°C in a manual defrost freezer, the positive control (Cat #7048-Pos) at -80°C, and nuclease-free H<sub>2</sub>O (Cat #7048-H2O) at 4°C.

### **Procedures** *Important: Only* use nuclease-free reagents in PCR applications.

- 1. Prior to use, allow the multiplex primer/probe sets (Cat #7048-MPP) to thaw to room temperature in the dark. Shake gently to mix well.
- 2. Centrifuge the vials at 1,500x g for 1 minute.
- 3. Aliquot multiplex primer/probe sets as needed. Store at -20°C in a manual defrost freezer. Avoid repeated freeze-and-thaw cycles. Maintain cold and in the dark when thawed.
- With test samples, two control samples should be run concurrently, the non-infectious positive control (Cat #7048-Pos), and H<sub>2</sub>O (Cat #7048-H2O) as the No Template Control (NTC). Prepare one 20 μl RT-qPCR reaction as shown in Table 1 for each control sample.

### Table 1.

Control sample (Cat #7048-Pos or 7048-H2O)	5 µl
Multiplex primer/probe sets (Cat #7048-MPP)	6 µl
1-step RT-qPCR Master mix, 4x (Cat #MB802a2)	5 µl
Nuclease-free H <sub>2</sub> O (Cat #7048-H2O)	4 µl
Total volume	20 µl

5. For each extracted RNA test sample, prepare one 20  $\mu$ l RT-qPCR reaction as shown in Table 2.

### Table 2.

RNA test sample (concentration varies)	5 μl
Multiplex primer/probe sets (Cat #7048-MPP)	6 µl
1-step RT-qPCR Master mix, 4x (Cat #MB802a2)	5 μl
Nuclease-free H <sub>2</sub> O (Cat #7048-H2O)	4 µl
Total volume	20 µl

- 6. Seal the RT-qPCR reaction wells. Centrifuge the plates or tubes at 1,500x g for 15 seconds.
- 7. Setup RT-qPCR reactions as shown in Table 3.

**Table 3.** Instrument settings for RT-qPCR reactions. Fluorescence data for both FAM and HEX channels should be collected during the data acquisition step.

Step	Temperature	Time	Number of cycles
UNG incubation	25°C	2 min	1
Reverse transcription	50°C	15 min	1
Enzyme activation	95°C	2 min	1
Denaturation	95°C	3 sec	
Annealing and extension	55°C	30 sec	45
Data acquisition	Plate read, detector (both FAM and HEX)		

## **Results Interpretation**

 Table 4. SCVMPD kit control sample test results interpretation.

Sample	FAM	HEX	<b>Results Interpretation</b>	
7049 Dec	+ +		Expected	
/048-Pos	-	-	Reverse transcription and/or PCR failed	
7049 1120	-	-	Expected	
/048-п20	If anyone of t	wo is positive	Reagent(s) contaminated	

**Table 5.** SCVMPD kit target sample test results interpretation when control results are as expected.

FAM	HEX	<b>Results Interpretation</b>
+	±	SARS-CoV-2 detected
-	+	SARS-CoV-2 not detected
-	-	Invalid result