SOLIScript® 1-step CoV Kit

Data Sheet

Cat. No.	Size (20 µl Reactions)
08-65-0000S	50 reactions
08-65-00250	250 reactions
08-65-05000	5000 reactions

Description:

SOLIScript® 1-step CoV Kit is optimized for highly sensitive one-step real-time RT-PCR (RT-qPCR) detection of viral RNA of severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) from RNA samples extracted from swab specimens. Specimen processing should be performed in accordance with pertaining national biological safety regulations and following the recommended World Health Organization (WHO) guidelines on biosafety and biosecurity.

SOLIScript® 1-step CoV Kit is suitable for probe-based detection of up to four targets simultaneously.

NB! SARS-CoV-2 primers and probes, applicable positive and internal extraction controls are not provided with the Kit and should be supplied by the user.

Kit Content:

Component	Size		
	50 rxn	250 rxn	5000 rxn
40x One-step SOLIScript® CoV Mix	25 µl	125 µl	2.5 ml
5x One-step Probe CoV Mix	200 µl	1.0 ml	20.0 ml
Nuclease-free water	1.25 ml	5.0 ml	100.0 ml

Mix compositions:

- **40x One-step SOLIScript® CoV Mix:** SOLIScript® Reverse Transcriptase, RiboGrip™ RNase Inhibitor
- **5x One-step Probe CoV Mix:** HOT FIREPol® DNA polymerase, reaction buffer, dNTPs, 15 mM $MgCl_2$ (1x qPCR solution - 3 mM $MgCl_2$)

Compatible real-time instruments:

The Kit is compatible with ROX-independent and ROX dependent qPCR platforms. **NOTE**: If using ROX-dependent qPCR cycler, ROX channel should be deactivated and set to "none" while selecting passive reference that will be used in the assay.

Shipping and Storage conditions:

Routine storage: -20 °C. Shipping and temporary storage for up to 1 week at room temperature.

Recommended RT-qPCR reaction mix:

Stock and final concentrations of primers and probe(s) are dependent on detection panel used in the assay.

Component	Volume	Final conc.
5x One-step Probe CoV Mix	4 µl	1x
40x One-step SOLIScript® CoV Mix	0.5 µl	1x
Forward Primer(s)	Variable	200-600 nM
Reverse Primer(s)	Variable	200-800 nM
Probe(s)	Variable	100-250 nM
RNA template	5 µl	
Nuclease-free water	up to 20 µl	
Total	**20 µl**	

NOTE: For multiple reactions, preparation of a master mix of common components is crucial to reduce pipetting errors. Scale all components according to sample number and reaction volumes, plus add 10% extra volume in order to accommodate pipetting errors.

Recommended RT-qPCR cycling protocol:

Optimal thermocycling protocol depends on a particular set of primers and probe(s) used in the molecular assay.

Step	Temp.	Time	
Reverse transcription	48–55 °C	10–30 min	
Initial activation [1]	95 °C	10 min	
Denaturation	95 °C	5 sec	45 cycles
Annealing/elongation	55–60 °C	30 sec	

[1] 10 min initial activation is crucial for a full activation of HOT FIREPol® DNA Polymerase

NB! The Kit has been tested and validated by diagnostic laboratories using primer-probe panels recommended by Charité, (Germany) and CDC (USA) protocols according to WHO "Coronavirus disease (COVID-19) technical guidance: Laboratory testing for 2019-nCoV in humans", section: "Molecular assays to diagnose COVID-19"; subsection: "In-house developed molecular assays".

Specifically adjusted and technically validated protocols for Charité (Germany) and CDC (USA) diagnostic assays can be found in **Supplementary Data Sheet**.

For Research Use Only. This product alone does not provide any diagnostic result.

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Other recommendations:

To avoid repeated freezing and thawing as well as to minimize the contamination risk of stock solutions of reagents, it is highly recommended to divide large-volume stocks into several smaller aliquots and store them at -20 °C.

Safety warnings and precautions:

This product and its components should be handled only by persons trained in laboratory techniques. It is advisable to wear suitable protective clothing, such as laboratory overalls, gloves and safety glasses. Care should be taken to avoid contact with skin or eyes. In case of contact with skin or eyes, wash immediately with water. See Safety Data Sheet for additional information.

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SOLIScript® 1-step CoV Kit

Supplementary Data Sheet

1. Diagnostic detection of SARS-CoV-2 (2019-nCoV) by real-time RT-PCR using Charité, Berlin Germany protocol[1] with SOLIScript® 1-step CoV Kit

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Primers and probes used in the assays are supplied by the user.
Being listed in this document does not imply any endorsement or scientific and diagnostic validation by Solis BioDyne.

Assay/Use	Oligonucleotide ID	Sequence (5'–3')	Comment
RdRP gene	RdRP_SARSr-F2	GTGARATGGTCATGTGTGGCGG	Use 600 nM per reaction
	RdRP_SARSr-R1	CARATGTTAAASACACTATTAGCATA	Use 800 nM per reaction
	RdRP_SARSr-P2	FAM-CAGGTGGAACCTCATCAGGAGATGC-BBQ	Specific for 2019-nCoV, will not detect SARS-CoV. Use 100 nM per reaction and mix with P1
	RdRP_SARSr-P1	FAM-CCAGGTGGWACRTCATCMGGTGATGC-BBQ	Pan Sarbeco-Probe, will detect 2019-nCoV, SARS-CoV and bat-SARS-related CoVs. Use 100 nM per reaction and mix with P2
E gene	E_Sarbeco_F1	ACAGGTACGTTAATAGTTAATAGCGT	Use 400 nM per reaction
	E_Sarbeco_R2	ATATTGCAGCAGTACGCACACA	Use 400 nM per reaction
	E_Sarbeco_P1	FAM-ACACTAGCCATCCTTACTGCGCTTCG-BBQ	Use 200 nM per reaction

[1] Corman et al. 2020 „Detection of 2019 novel coronavirus (2019-nCoV) by real-time RT-PCR" doi: 10.2807/1560-7917.ES.2020.25.3.2000045; and https://www.who.int/docs/default-source/coronaviruse/whoinhouseassays.pdf?sfvrsn=de3a76aa_2

1.1 First line screening assay (E assay)

Component	Volume[1]	
Nuclease-free water	8.5 µl	
5x One-step Probe CoV Mix	4 µl	
40x One-step SOLIScript® CoV Mix	0.5 µl	
Primer E_Sarbeco_F1 (10 µM stock solution)	0.8 µl	ACAGGTACGTTAATAGTTAATAGCGT
Primer E_Sarbeco_R2 (10 µM stock solution)	0.8 µl	ATATTGCAGCAGTACGCACACA
Probe E_Sarbeco_P1 (10 µM stock solution)	0.4 µl	FAM-ACACTAGCCATCCTTACTGCGCTTCG-BBQ
Template RNA, add	5 µl	
Total reaction volume	**20 µl**	

[1] For multiple reactions, preparation of a master mix of common components is crucial to reduce pipetting errors. Scale all components proportionally according to sample number and reaction volumes. Make sure you use enough of each reagent for your reactions, plus 10% extra volume to accommodate pipetting errors.

Thermal conditions compatible with most cyclers:

Step	Temperature	Time	
Reverse transcription	55 °C	10 min	
Initial denaturation	95 °C	10 min	
Denaturation	95 °C	15 sec	45 cycles
Annealing/Elongation	58 °C	30 sec	

Alternative thermal conditions:

Step	Temperature	Time	
Reverse transcription	48 °C	30 min	
Initial denaturation	95 °C	10 min	
Denaturation	95 °C	5 sec	45 cycles
Annealing/Elongation	55 °C	30 sec	

1.2 Confirmatory assay (RdRP assay; detect 2019-nCoV, SARS-CoV and bat-SARS-related CoVs)

Component	Volume[1]	
Nuclease-free water	7.3 µl	
5x One-step Probe CoV Mix	4 µl	
40x One-step SOLIScript® CoV Mix	0.5 µl	
RdRP_SARSr-F2 (10 µM stock solution)	1.2 µl	GTGARATGGTCATGTGTGGCGG
RdRP_SARSr-R1 (10 µM stock solution)	1.6 µl	CARATGTTAAASACACTATTAGCATA
RdRP_SARSr-P1 (10 µM stock solution)	0.2 µl	FAM-CCAGGTGGWACRTCATCMGGTGATGC-BBQ
RdRP_SARSr-P2 (10 µM stock solution)	0.2 µl	FAM-CAGGTGGAACCTCATCAGGAGATGC-BBQ
Template RNA, add	5 µl	
Total reaction volume	**20 µl**	

[1] For multiple reactions, preparation of a master mix of common components is crucial to reduce pipetting errors. Scale all components proportionally according to sample number and reaction volumes. Make sure you use enough of each reagent for your reactions, plus 10% extra volume to accommodate pipetting errors.

Thermal conditions compatible with most cyclers:

Step	Temperature	Time	
Reverse transcription	55 °C	10 min	
Initial denaturation	95 °C	10 min	
Denaturation	95 °C	15 sec	45 cycles
Annealing/Elongation	58 °C	30 sec	

Alternative thermal conditions:

Step	Temperature	Time	
Reverse transcription	48 °C	30 min	
Initial denaturation	95 °C	10 min	
Denaturation	95 °C	5 sec	45 cycles
Annealing/Elongation	55 °C	30 sec	

1.3 Discrimatory assay (RdRp assay, specific for 2019-nCoV)

Component	Volume[1]	
Nuclease-free water	7.5 µl	
5x One-step Probe CoV Mix	4 µl	
40x One-step SOLIScript® CoV Mix	0.5 µl	
RdRP_SARSr-F2 (10 µM stock solution)	1.2 µl	GTGARATGGTCATGTGTGGCGG
RdRP_SARSr-R1 (10 µM stock solution)	1.6 µl	CARATGTTAAASACACTATTAGCATA
RdRP_SARSr-P2 (10 µM stock solution)	0.2 µl	FAM-CAGGTGGAACCTCATCAGGAGATGC-BBQ
Template RNA, add	5 µl	
Total reaction volume	**20 µl**	

[1] For multiple reactions, preparation of a master mix of common components is crucial to reduce pipetting errors. Scale all components proportionally according to sample number and reaction volumes. Make sure you use enough of each reagent for your reactions, plus 10% extra volume to accommodate pipetting errors.

Thermal conditions compatible with most cyclers:

Step	Temperature	Time	
Reverse transcription	55 °C	10 min	
Initial denaturation	95 °C	10 min	
Denaturation	95 °C	15 sec	45 cycles
Annealing/Elongation	58 °C	30 sec	

Alternative thermal conditions:

Step	Temperature	Time	
Reverse transcription	48 °C	30 min	
Initial denaturation	95 °C	10 min	
Denaturation	95 °C	5 sec	45 cycles
Annealing/Elongation	55 °C	30 sec	

2. Diagnostic detection of SARS-CoV-2 (2019-nCoV) by real-time RT-PCR using CDC protocol (effective: 3/15/2020)[2] with SOLIScript® 1-step CoV Kit

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SARS-CoV-2 (2019-nCoV) Real-time RT-PCR Panel Primers and Probes[3], nCoV_N_Positive Control and Internal Control (also known as Human Specimen Control) are supplied by the user.

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Name	Description	Sequence (5'–3')	Label	Working conc.
2019-nCoV_N1-F	2019-nCoV_N1 Forward Primer	5'-GACCCCAAAATCAGCGAAAT-3'	None	20 µM
2019-nCoV_N1-R	2019-nCoV_N1 Reverse Primer	5'-TCTGGTTACTGCCAGTTGAATCTG-3'	None	20 µM
2019-nCoV_N1-P	2019-nCoV_N1 Probe	5'-FAM-ACCCCGCATTACGTTTGGTGGACC-BHQ1-3'	FAM, BHQ-1	5 µM
2019-nCoV_N2-F	2019-nCoV_N2 Forward Primer	5'-TTACAAACATTGGCCGCAAA-3'	None	20 µM
2019-nCoV_N2-R	2019-nCoV_N2 Reverse Primer	5'-GCGCGACATTCCGAAGAA-3'	None	20 µM
2019-nCoV_N2-P	2019-nCoV_N2 Probe	5'-FAM-ACAATTTGCCCCCAGCGCTTCAG-BHQ1-3'	FAM, BHQ-1	5 µM
RP-F	RNAse P Forward Primer	5'-AGATTTGGACCTGCGAGCG-3'	None	20 µM
RP-R	RNAse P Reverse Primer	5'-GAGCGGCTGTCTCCACAAGT-3'	None	20 µM
RP-P	RNAse P Probe	5'-FAM-TTCTGACCTGAAGGCTCTGCGCG-BHQ1-3'	FAM, BHQ-1	5 µM

[2] CDC 2019-Novel Coronavirus (2019-nCoV) Real-Time RT-PCR Diagnostic Panel (https://www.fda.gov/media/134922/download)

[3] 2019-Novel Coronavirus (2019-nCoV) Real-time rRT-PCR Panel Primers and Probes (https://www.who.int/docs/default-source/coronaviruse/uscdcrt-pcr-panel-primer-probes.pdf?sfvrsn=fa29cb4b_2)

Reaction Mix for 2019-nCoV_N1, 2019-nCoV_N2 and RP singleplex assays

Component	Volume[1]	Final concentration
Nuclease-free water	9 µl	
5x One-step Probe CoV Mix	4 µl	1x
40x One-step SOLIScript® CoV Mix	0.5 µl	1x
Primer F (20 µM stock solution) [2]	0.5 µl	500 nM
Primer R (20 µM stock solution) [2]	0.5 µl	500 nM
Probe (5 µM stock solution) [2]	0.5 µl	125 nM
Template RNA, add	5 µl	
Total reaction volume	**20 µl**	

[1] For multiple reactions, preparation of a master mix of common components is crucial to reduce pipetting errors. Scale all components proportionally according to sample number and reaction volumes. Make sure you use enough of each reagent for your reactions, plus 10% extra volume to accommodate pipetting errors.

[2] If a Combined Primer/Probe Mix is used, pipet 1.5 µl of Combined Primer/Probe Mix per reaction.

Thermal conditions compatible with most cyclers:

Step	Temperature	Time	
Reverse transcription	55 °C	10 min	
Initial denaturation	95 °C	10 min	
Denaturation	95 °C	15 sec	45 cycles
Annealing/Elongation	58 °C	30 sec	

Alternative thermal conditions:

Step	Temperature	Time	
Reverse transcription	48 °C	30 min	
Initial denaturation	95 °C	10 min	
Denaturation	95 °C	5 sec	45 cycles
Annealing/Elongation	55 °C	30 sec	