firefly® technical note
Olink® Explore HT

Overview

The Olink® Explore HT workflow contains multiple high-throughput liquid handling steps requiring accurate and reproducible dispensing across 384-well plates. This technical note describes automation of Sample Dilution Plate preparation and PCR Plate preparation using the firefly dispense head.

Automation reduces manual reagent dispensing, improves reproducibility and consistency, and supports high-throughput preparation of plates for downstream Olink Explore HT processing.

firefly protocols

Protocol Number	Protocol Name	firefly Run Time
1 of 2	4.1 Sample Dilution	4 min
2 of 2	7.3 Prepare PCR Plates and perform PCR	4 min 38 sec

Table 1. Protocol Overview.

Input Variable

Protocol does not contain variables

Master Mix Volumes

Protocol Name	Reagent	Total Required Volume
4.1 Sample Dilution	Sample Diluent	12,000 µL
7.3 Prepare PCR Plates and perform PCR	PCR1 Mix	28,752 µL (3x 9,584 µL)

Table 2. Master Mix / Reagent Volumes.

Consumable Type

These workflows are dispense-head only protocols and do not require pipette head consumables.

Dispense Head Consumable Type	Product Number	Prot 1	Prot 2
Syringes (Ultra-low Retention)	4150-07208	-	3x
Syringes (Standard)	4150-07200	1×	-
Reservoirs (Standard)	4150-07103	1x	3x

Table 3. Dispense Head Consumables.

Workflow Overview

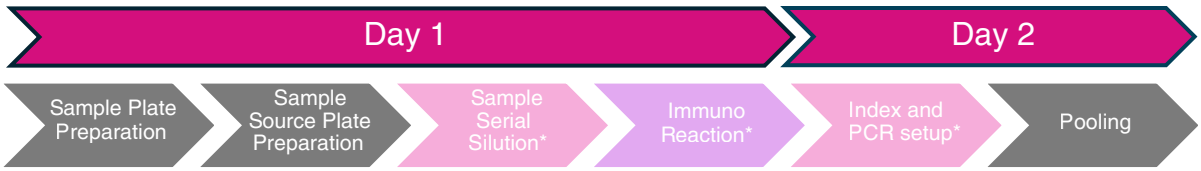


Figure 1. Overview of the Olink® Explore HT workflow and stages that can be automated using SPT Labtech instrumentation. Sample Dilution Plate Preparation and PCR Plate Preparation are automated on firefly as described in this technical note. Pink denotes firefly used steps and purple denotes steps where a MLV can be used. *Additional steps, including sample serial dilution, immunoreaction and indexing, may also be automated using SPT Labtech mosquito LV depending on laboratory workflow requirements.

Workflow Details

Protocol 1 of 2 - 4.1 Sample Dilution

This protocol automates preparation of the Sample Dilution Plates used in the Olink Explore HT workflow. Sample Diluent is loaded into a reservoir and according to the predefined plate map using the firefly dispense head. The dispensed plates are subsequently used for sample dilution prior to downstream assay processing.

User Interactions

1) Load Sample Diluent into the designated reservoir.
2) Confirm correct reagent assignment.
3) Start the protocol.
4) Remove prepared dilution plates following completion.
5) Proceed with sample addition according to the Olink workflow.

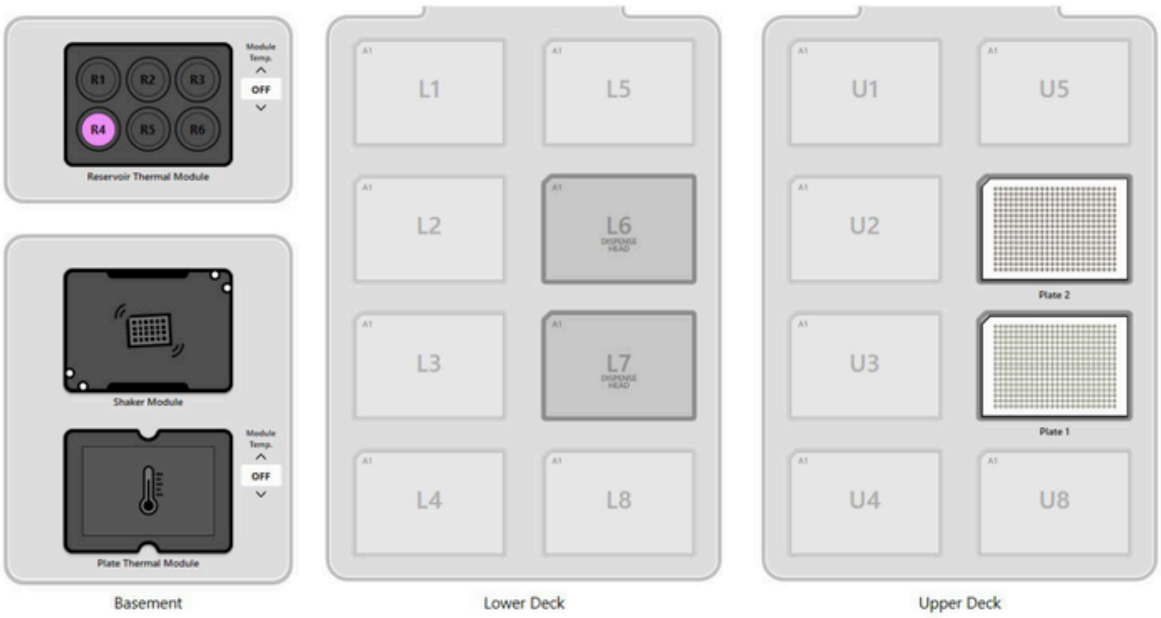


Figure 2. **Deck Layout – Sample Dilution.**

Protocol 2 of 2 - 7.3 Prepare PCR Plates and Perform PCR

This protocol automates dispensing of PCR1 Mix into four Incubation Plates prior to PCR amplification. PCR1 Mix is dispensed from three reservoirs (R4–R6), delivering 18 µL per well and generating a final reaction volume of 19.8 µL. Plates are processed in two batches (1–2, then 3–4).

Important: Plates must be loaded onto the ProFlex™ thermocycler within **10 minutes** of PCR1 Mix being dispensed into the first well. Process and transfer Plates 1 and 2 first, followed by Plates 3 and 4.

User Interactions

1) Ensure ULR syringes are installed.
2) Start a 10-minute timer when PCR1 Mix is dispensed into the first well of Plate
3) 3. Seal Plate 1 immediately following dispense.
4) Inspect all wells to confirm uniform liquid volumes.
5) Vortex thoroughly using MixMate® or equivalent.
6) Repeat for Plate 2.
7) Start PCR amplification for Plates 1 and 2.
8) Repeat the process for Plates 3 and 4.
9) Start PCR amplification for Plates 3 and 4.

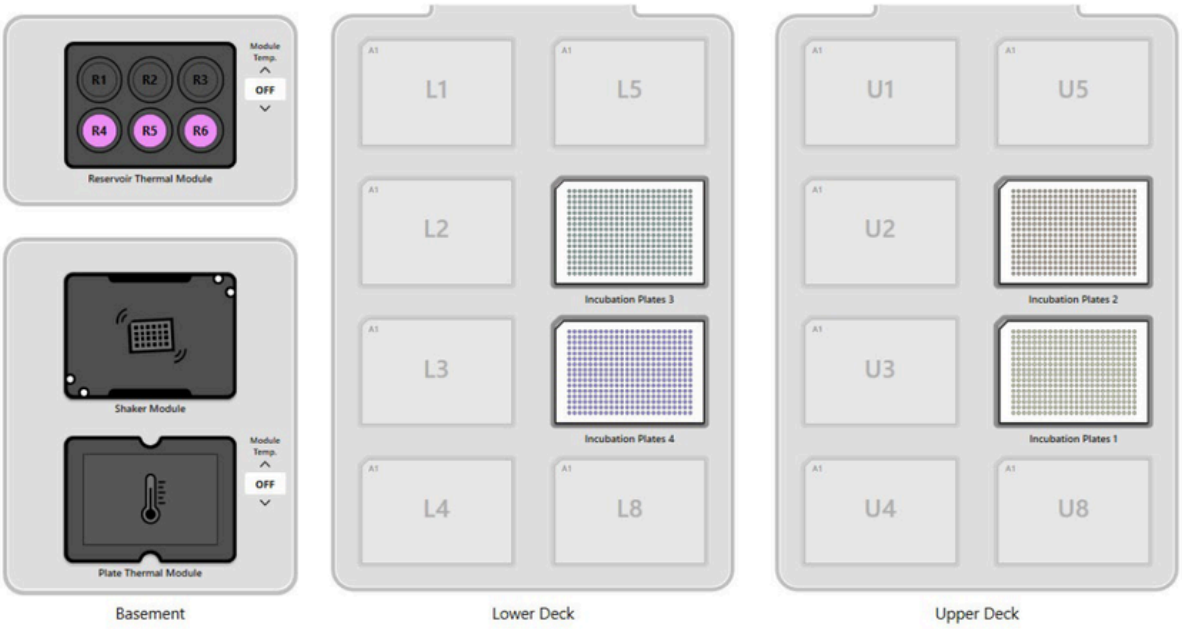


Figure 3. **Deck Layout – PCR Plate Preparation.**

For questions regarding SPT Labtech's firefly, contact our support team through **fireflysupport@sptlabtech.com**