1 Description

Stracotek's modular Cyclotron Liquid Targets Control and Delivery System, CTL-TCDS, is a state-of-the-art web browser controller for: Stracotek liquid target filling and empty modules (CTL-FEM), switching valves module for target delivery lines to destinations (CTL-SVM), intermediate vial in dose calibrator (DCIV), cyclotron beam interlocks for CTL-FEM, cyclotron transfer interlocks, hot cell door/pressure interlocks. The system is fully configured by the site engineer, including tag naming, enabling/disabling hardware and/or placing equipment in/out-of-service.

The TCDS is designed for safe transfer of radioactive liquids (F-18, N-13, Ga-68, etc.). The basic system allows transfer of a single radioisotope, typically F-18. Optional configurations permit transfer of multiple radioisotopes and/or individual target fill/transfer controls.

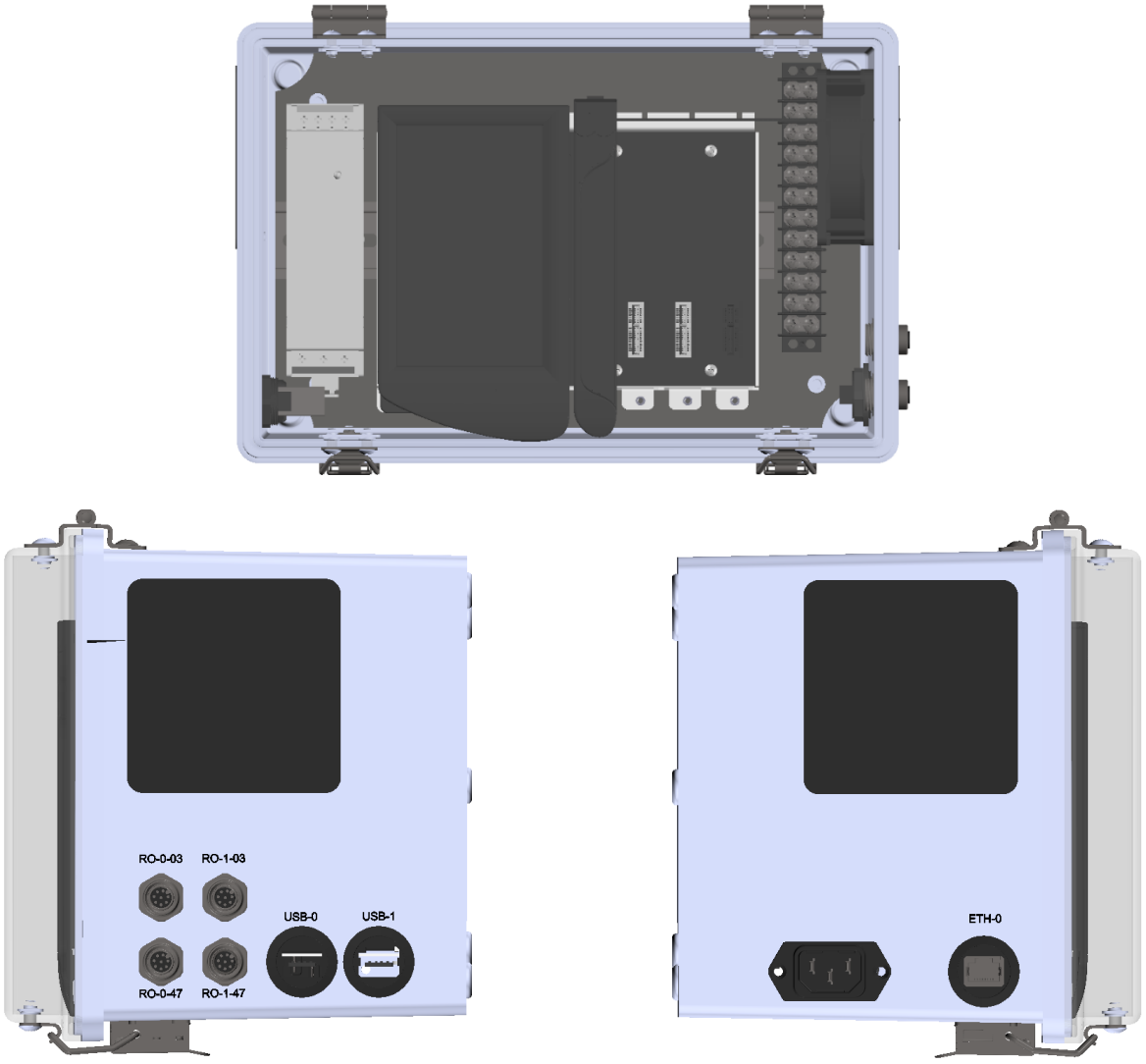
For systems with dose calibrator intermediate vial, DCIV, the operator must ensure that the TCDS is in receiving mode before transferring a target from the cyclotron to the intermediate vial. System ready signals (dry contact) are provided to interlock the cyclotron transfer. For the transfer to the hot cell, either directly from the target or through an intermediate vial, the system provides the means for chemists/operators to select a safe route for Radioisotope delivery to a Hot Cell. The workflow is either transactional between the chemist and operator or fully controlled by the operator with hot cell interlocks for safety. At any time, the chemist can use the Transfer Status Info panel to observe the transfer progress.

2 Hardware

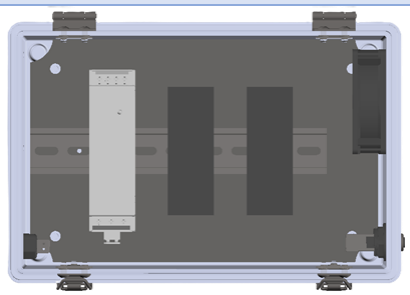
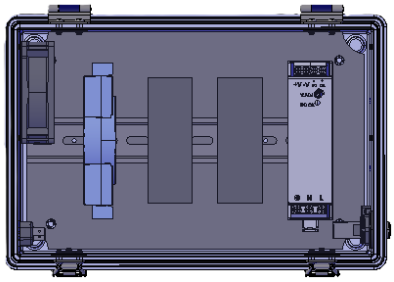
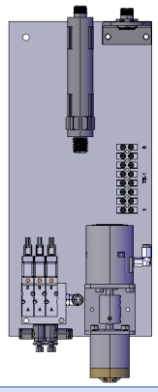
2.1 Controller (Master)

Product ID:	**CTL-DS-PLC-8S-14D-2O**	**CTL-DS-PLC-8S-14D-2O-16I**
# Target Filling and Empty Modules (CTL-FEM)	0	
# cyclotron beam interlocks	0	
# configurable receiving inputs for Targets	8 + 1 parked position	
# configurable destination outputs for synthesizers	14 + 1 Recovery + 1 parked	
# cyclotron interlocks for target transfer	4	
# hot cells	8 w/ virtual door interlocks	8 w/ physical door interlocks
# user accounts	No limit	
# Role	Admin/Engineer/Operator/ Chemist/Pharmacist	
Dimensions	304 mm (W) x 214 mm (H) x 183 mm (D)	

Note: Target Filling and Empty Modules (CTL-FEM), Switching Valves Model (CTL-FEM) and Dose calibrator intermediate vial option (DCIV) ordered separately.

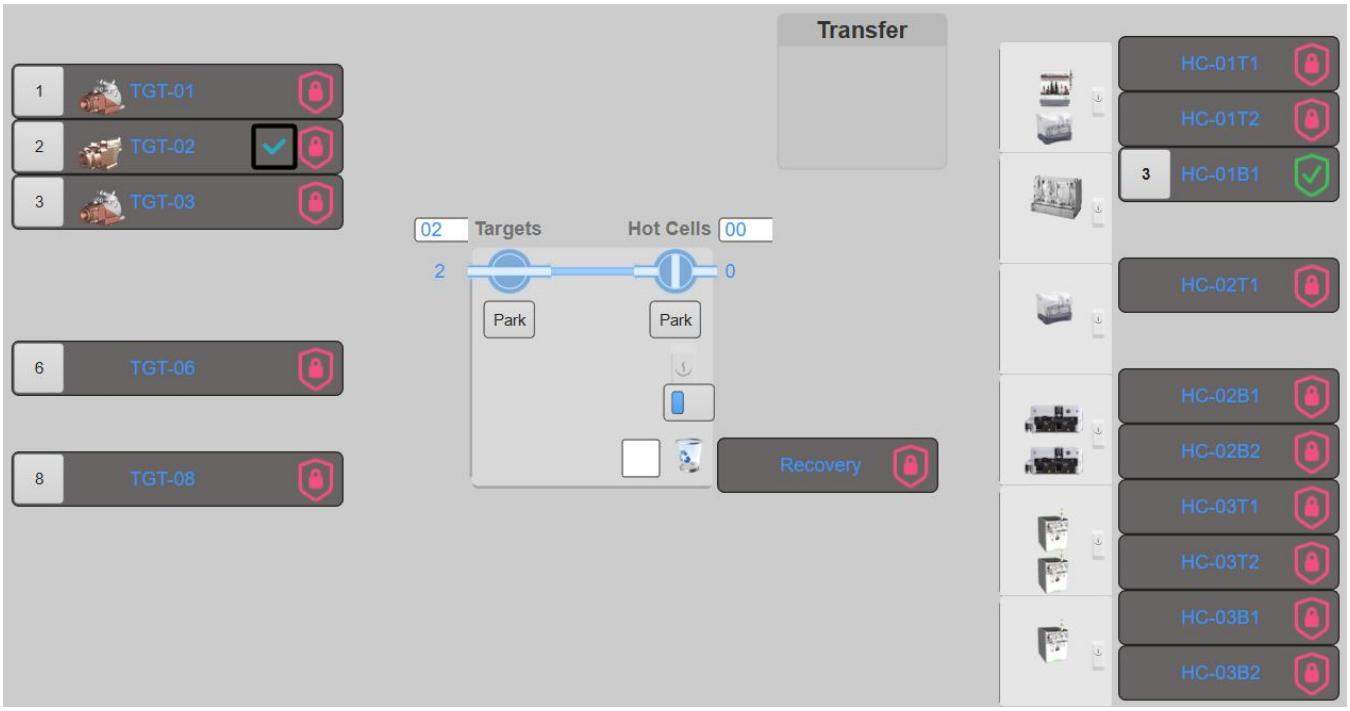


2.2 Switching Valves Module (Slave)

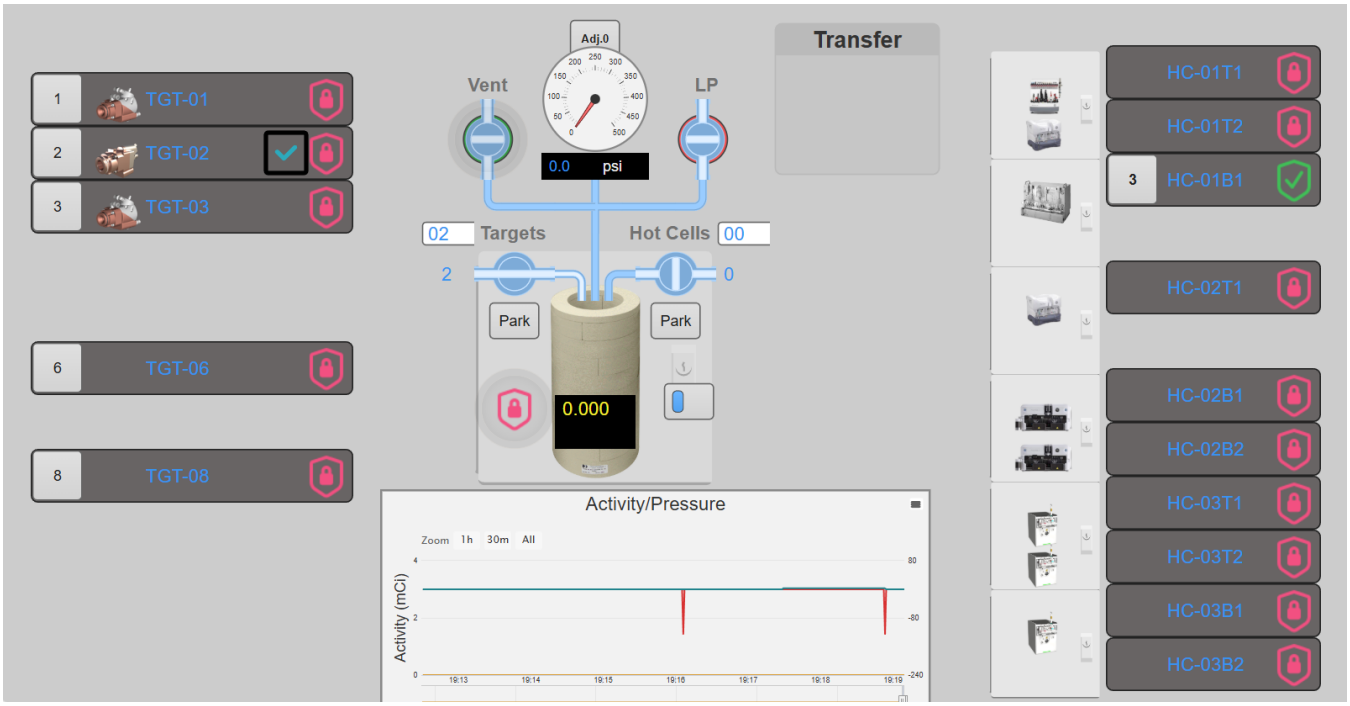
Product ID:	**CTL-DS-SVM-8S-14D**	**CTL-DS-SVM-8S-14D-DCIV**
	 	  
# receiving inputs for Targets	8 + 1 parked position	
# destination outputs for synthesizers	14 + 1 Recovery + 1 parked	
Dose calibrator Comm	0	1
Pressure transducers	0	1
Intermediate vials	0	1
Dimensions	304 mm (W) x 214 mm (H) x 183 mm (D)	

3 User Interface

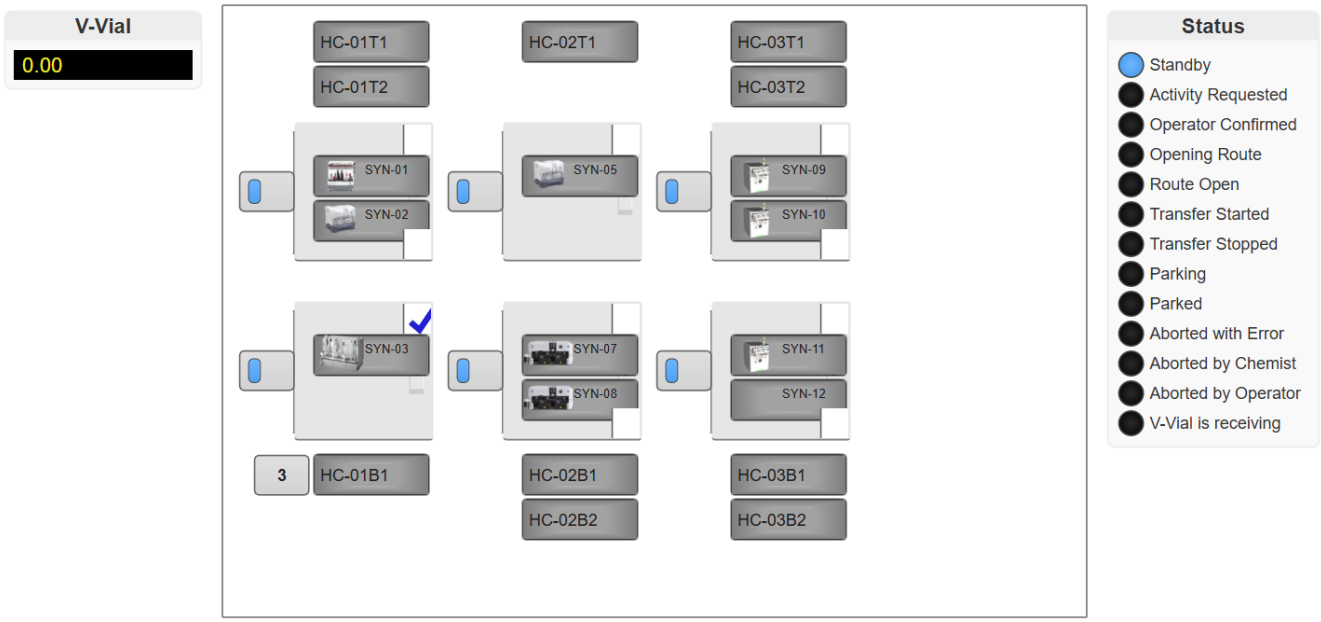
3.1 Operator View for Delivery System- Basic (CTL-DS)



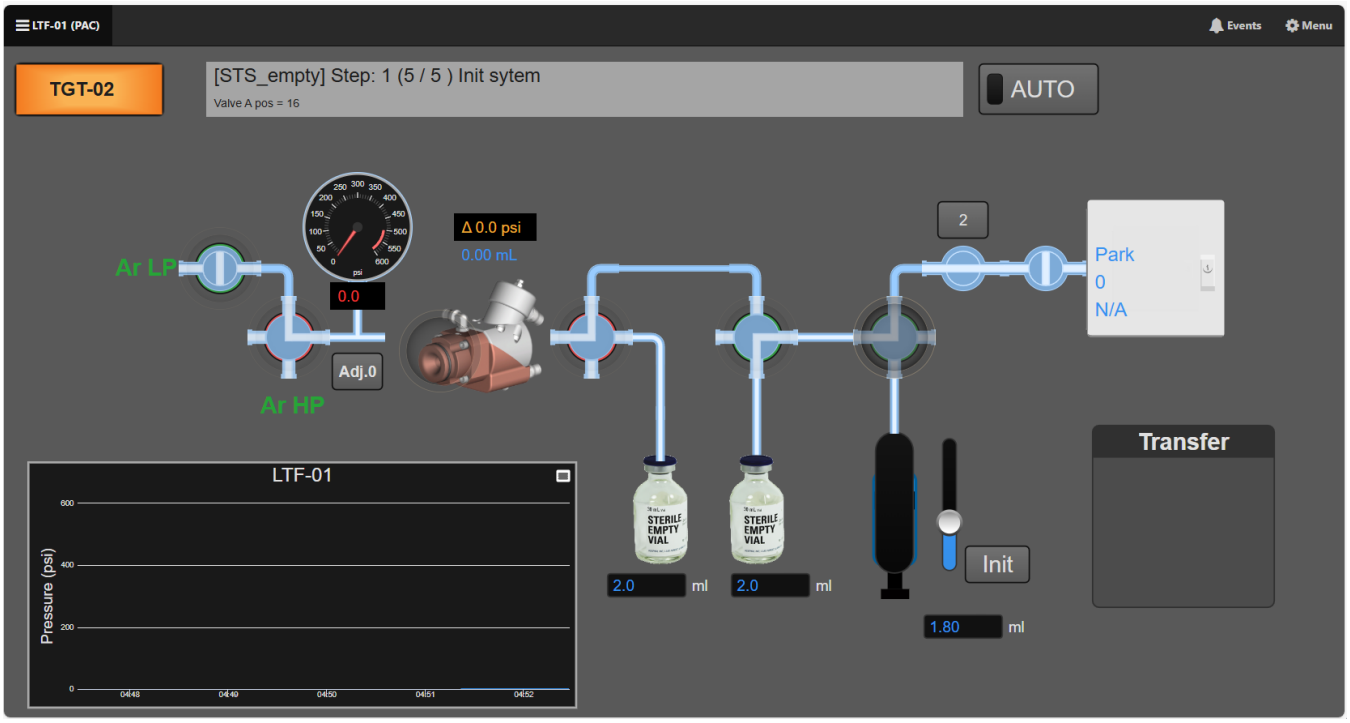
3.2 Operator View of Delivery System with Intermediate V-Vial (CTL-DS-DCIV)



3.3 Hot Cells (Chemist View)



3.4 Target Fill and Empty Control Panel for CTL-FEM or GEHC LTF (optional)



4 Settings (Engineer)

4.1 Target Ports

Upload — **Specifications** — Save

	Port 1	Port 2	Port 3	Port 4
Enabled	☑	☑	☐	☐
Tag	TGT-01	TGT-02	TGT-03	TGT-04
Brand	Stracotek	Stracotek	Stracotek	Stracotek
Model / ID	DC55 1	DC70 20	SC65 20	SC65 30
Isotope	F-18	F-18	Ga-68	Cu-61
Type	Liquid	Liquid	Hybrid	Solution
Max Beam Current (µA)	80	125	60	60
Max Pressure	500	500	600	600
Min Pressure	300	300	80	80
Min Fill Volume (mL)	3.50	3.50	3.50	3.50
Max Fill Volume (mL)	4.50	5.00	5.00	5.00

4.2 Destinations

Destinations — Save

	Enabled	Model	Tag	#	ID	Cell ID	Line Tag	SEL A
01	☑	1	SYN-1	1	EQP-1	01	HC-01T1	1
02	☑	3	SYN-2	2	EQP-2	01	HC-01T2	2
03	☑	2	SYN-3	3	EQP-3	02	HC-01B1	3
04	☐	0	SYN-4	4	EQP-4	02	HC-01B2	4
05	☑	3	SYN-5	5	EQP-5	03	HC-02T1	5
06	☐	0	SYN-6	6	EQP-6	03	HC-02T2	6
07	☑	4	SYN-7	7	EQP-7	04	HC-02B1	7
08	☑	4	SYN-8	8	EQP-8	04	HC-02B2	8
09	☑	5	SYN-9	9	EQP-9	05	HC-03T1	9
10	☑	5	SYN-10	10	EQP-10	05	HC-03T2	10
11	☑	6	SYN-11	11	EQP-11	06	HC-03B1	11
12	☐	0	SYN-12	12	EQP-12	06	HC-03B2	12
13	☐	0	SYN-13	13	EQP-13	07	HC-04T1	13
14	☐	0	SYN-14	14	EQP-14	07	HC-04T2	14