

April 16, 1935

G. H. ENGLEHART

1,997,901

WATER SYNCHRONIZER

Filing Date: 10, 1932

Fig. 1

Fig. 2

Fig. 3

Fig. 4

INVENTOR:  
GEO. H. ENGLEHART  
BY: [Signature]

**RAIN  BIRD**®

**iQ4**

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# Synchronization, Reverse Synchronization & Log Retrieval

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# Synchronization, Reverse Synchronization & Log Retrieval Overview

IQ4 has two-way communication with irrigation controllers connected to the IQ system

- **Sync/Auto Sync/Scheduled Sync**
  - Sends programs and configurations from IQ4 **to controllers**
- **Reverse Sync**
  - Retrieves programs and configurations **from controllers** to IQ4
- **Logs/Auto Retrieve Logs/Scheduled Retrieve Logs**
  - Retrieves logged data and alarms **from controllers**

# Schedule Synchs and Log Retrievals

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- You can schedule synchronization and log retrieval times in addition to automatic or manual options
- The Controller Settings edit page has four sub-menus:
  - Connection
  - Synchronization
  - Log Retrieval
  - Advanced Settings
- For Synchronization and Log Retrieval, there are three settings in the sub-menu:
  - Manual
  - Automatic
  - Scheduled

# Schedule Synchronizations

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- Synchronization functionality:
  - Manual: A synchronization will only take place when the user clicks on the Sync icon and initiates the synchronization
  - Automatic: IQ4 will determine when to synchronize with the controller. This normally takes place one hour after a change to a controller has been made in IQ4
  - Scheduled: The user sets a particular time for IQ4 to synchronize with the controller each day. There is a checkbox that will allow IQ4 to ignore a synchronization if there are no changes to the controller
- Best Practices:
  - Scheduled Synchronizations need to be set BEFORE the first irrigation event each day (use Dryrun™ to determine first irrigation times)
  - CAUTION: Scheduled synchronizations that interrupt irrigation will cancel all further irrigation until the next scheduled start that takes place after the sync

# Scheduled Synchronizations

The screenshot displays the Rain Bird iQ4 interface. On the left, the 'Controller Settings' panel is open for the 'Malkin Residence - Test Controller'. A yellow circle highlights the 'Synchronization' setting, which is currently set to 'Manual'. A yellow arrow points from this setting to the 'Scheduled Synchronizations' table on the right.

**Controller Settings**

- Connection: 10.70.191.4
- Synchronization: Manual
- Log Retrieval: Scheduled
- Advanced Settings

**Scheduled Synchronizations Table**

#	Name	Stations	Status	Start	Water Days	Adjust
A	Shrubs - Point Source Drip	2	-	7:00 AM	Su M T W Th F S	100
B	Trees - Point Source Drip	2	-	7:00 AM	Su M T W Th F S	100
C	Planters - Pots	3	-	5:00 AM	Su M T W Th F	100
D	Turfgrass	3	-	4:00 AM	Su M W F	100

# Scheduled Synchronizations

The screenshot displays the Rain Bird irrigation controller interface. At the top, a green navigation bar contains the Rain Bird logo and menu items: ACTIVITY, CONTROLLERS, PROGRAMS, REPORTS, and SYSTEM SETUP. On the right side of this bar are several status icons: a refresh icon with '41', a triangle icon with '15', a clock icon with '0', a circular arrow icon with '11', a circle icon with '1', and a notification bell icon with '99+'. Below the navigation bar, the main header shows the controller name 'MALKIN RESIDENCE - TEST CONTROLL...' and tabs for 'Programs', 'Dryrun™', 'Stations', 'Master Valves', and 'Sensors'. The 'Programs' tab is active, showing a table of scheduled synchronizations. The table has columns for '#', 'Name', 'Stations', 'Status', 'Start', 'Water Days', and 'Adjust'. Four programs are listed: A (Shrubs - Point Source Drip), B (Trees - Point Source Drip), C (Planters - Pots), and D (Turfgrass). On the left side, a 'Controller Settings' panel is open, showing options for 'Manual', 'Automatic', and 'Scheduled'. The 'Manual' option is selected and circled in yellow. A yellow arrow points from this circle to the 'Scheduled' option in the table. At the bottom of the controller settings panel is a green 'Back' button.

#	Name	Stations	Status	Start	Water Days	Adjust	
<input type="checkbox"/>	A	Shrubs - Point Source Drip	2	-	7:00 AM	Su M T W Th F S	100
<input type="checkbox"/>	B	Trees - Point Source Drip	2	-	7:00 AM	Su M T W Th F S	100
<input type="checkbox"/>	C	Planters - Pots	3	-	5:00 AM	Su M T W Th F	100
<input type="checkbox"/>	D	Turfgrass	3	-	4:00 AM	Su M W F	100

# Scheduled Synchronizations

The screenshot displays the Rain Bird dashboard interface. At the top, a green navigation bar contains the logo and menu items: ACTIVITY, CONTROLLERS, PROGRAMS, REPORTS, and SYSTEM SETUP. On the right side of this bar are several status icons: a refresh icon with '41', a triangle icon with '15', a circle with slash icon with '0', a circle with X icon with '11', a circle with dot icon with '1', and a notification bell icon with '99+'. Below the navigation bar, the breadcrumb path reads: MALKIN RESIDENCE - TEST CONTROLL... > Programs > Dryrun™ > Stations > Master Valves > Sensors. The main content area is split into two panels. The left panel, titled 'Controller Settings' for 'LXME Direct', shows 'Synchronization' options: Manual, Automatic, and Scheduled (selected). Under 'Scheduled', the time is set to '8:15 PM' and the checkbox 'Only synchronize if there are changes.' is checked. A yellow circle highlights this checkbox, with a yellow arrow pointing to the table in the right panel. The right panel features a table with columns: #, Name, Stations, Status, Start, Water Days, and Adjust. The table contains four rows of data.

#	Name	Stations	Status	Start	Water Days	Adjust
A	Shrubs - Point Source Drip	2	-	7:00 AM	Su M T W Th F S	100
B	Trees - Point Source Drip	2	-	7:00 AM	Su M T W Th F S	100
C	Planters - Pots	3	-	5:00 AM	Su M T W Th F	100
D	Turfgrass	3	-	4:00 AM	Su M W F	100

# Schedule Log Retrievals

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- Log Retrieval functionality:
  - Manual: A log retrieval will only take place when the user clicks on the Logs icon and initiates the log retrieval
  - Automatic: IQ4 will determine when to retrieve logs from the controller. This normally takes place six hours after the first start time for the controller. If irrigation is still occurring, IQ4 will wait one hour and retry the log retrieval. It will continue this pattern until the logs are fully retrieved
  - Scheduled: The user sets a particular time for IQ4 to retrieve logs from the controller each day. The user can set up to 24 log retrieval times each day



# Auto Retrieve Logs

## Auto Retrieve Logs – Retrieve Times

First Start Time	First Retrieve Time (6 hours later)		First Start Time	First Retrieve Time (6 hours later)
8:00 PM - 9:00 PM	3:00 AM		20:00 - 21:00	3:00
9:00 PM - 10:00 PM	4:00 AM		21:00 - 22:00	4:00
10:00 PM - 11:00 PM	5:00 AM		22:00 - 23:00	5:00
11:00 PM - 12:00 AM	6:00 AM		23:00 - 0:00	6:00
12:00 AM - 1:00 AM	7:00 AM		0:00 - 1:00	7:00
1:00 AM - 2:00 AM	8:00 AM		1:00 - 2:00	8:00
2:00 AM - 3:00 AM	9:00 AM		2:00 - 3:00	9:00
3:00 AM - 4:00 AM	10:00 AM		3:00 - 4:00	10:00
4:00 AM - 5:00 AM	11:00 AM		4:00 - 5:00	11:00
5:00 AM - 6:00 AM	12:00 PM		5:00 - 6:00	12:00
6:00 AM - 7:00 AM	1:00 PM		6:00 - 7:00	13:00
7:00 AM - 8:00 AM	2:00 PM		7:00 - 8:00	14:00
8:00 AM - 9:00 AM	3:00 PM		8:00 - 9:00	15:00
9:00 AM - 10:00 AM	4:00 PM		9:00 - 10:00	16:00
10:00 AM - 11:00 AM	5:00 PM		10:00 - 11:00	17:00
11:00 AM - 12:00 PM	6:00 PM		11:00 - 12:00	18:00
12:00 PM - 1:00 PM	7:00 PM		12:00 - 13:00	19:00
1:00 PM - 2:00 PM	8:00 PM		13:00 - 14:00	20:00
2:00 PM - 3:00 PM	9:00 PM		14:00 - 15:00	21:00
3:00 PM - 4:00 PM	10:00 PM		15:00 - 16:00	22:00
4:00 PM - 5:00 PM	11:00 PM		16:00 - 17:00	23:00
5:00 PM - 6:00 PM	12:00 AM		17:00 - 18:00	0:00
6:00 PM - 7:00 PM	1:00 AM		18:00 - 19:00	1:00
7:00 PM - 8:00 PM	2:00 AM		19:00 - 20:00	2:00

# Log Retrievals

The screenshot displays the Rain Bird iQ4 interface. At the top, a green navigation bar contains the iQ4 logo and menu items: ACTIVITY, CONTROLLERS, PROGRAMS, REPORTS, and SYSTEM SETUP. On the right side of this bar are several status icons: a refresh icon with '41', a triangle icon with '15', a circle with a slash icon with '0', a circle with a plus icon with '11', a circle with a minus icon with '1', and a notification bell icon with '99+'. Below the navigation bar, the main interface is divided into two panels. The left panel, titled 'Controller Settings', is for the 'Malkin Residence - Test Controller'. It includes sections for 'Connection' (10.70.191.4), 'Synchronization' (Manual), 'Log Retrieval' (Scheduled), and 'Advanced Settings'. A yellow circle highlights the 'Log Retrieval' and 'Advanced Settings' options. Below these are 'Rain Delay' settings (Days: 0, AUTO selected) and weather information for Tucson, Arizona USA (92°F, Partly Cloudy). The right panel, titled 'Programs', shows a table of four programs: A (Shrubs - Point Source Drip), B (Trees - Point Source Drip), C (Planters - Pots), and D (Turfgrass). A yellow arrow points from the 'Log Retrieval' setting in the left panel to the table in the right panel.

#	Name	Stations	Status	Start	Water Days	Adjust
A	Shrubs - Point Source Drip	2	-	7:00 AM	Su M T W Th F S	100
B	Trees - Point Source Drip	2	-	7:00 AM	Su M T W Th F S	100
C	Planters - Pots	3	-	5:00 AM	Su M T W Th F	100
D	Turfgrass	3	-	4:00 AM	Su M W F	100

# Log Retrievals

The screenshot displays the Rain Bird controller interface. On the left, a 'Controller Settings' panel is open, showing 'Log Retrievals' options: Manual (selected), Automatic, and Scheduled. A yellow circle highlights these options, and a yellow arrow points from the 'Manual' option towards the main table. The main table lists four programs (A, B, C, D) with columns for #, Name, Stations, Status, Start, Water Days, and Adjust. The 'Manual' option is selected in the 'Log Retrievals' section.

#	Name	Stations	Status	Start	Water Days	Adjust
A	Shrubs - Point Source Drip	2	-	7:00 AM	Su M T W Th F S	100
B	Trees - Point Source Drip	2	-	7:00 AM	Su M T W Th F S	100
C	Planters - Pots	3	-	5:00 AM	Su M T W Th F	100
D	Turfgrass	3	-	4:00 AM	Su M W F	100

# Scheduled Log Retrievals

The screenshot displays the Rain Bird controller interface. On the left, the 'Controller Settings' panel is open to 'Log Retrieval' settings. The 'Automatic' mode is selected, and the 'Scheduled' option is active. A yellow circle highlights the 'Scheduled Time' list, which includes 10:00 AM, 3:00 AM, 9:00 AM, 4:00 PM, and 8:00 PM. A yellow arrow points from this list towards the main table. The main table lists four irrigation programs (A, B, C, D) with their respective stations, status, start times, water days, and adjustment values.

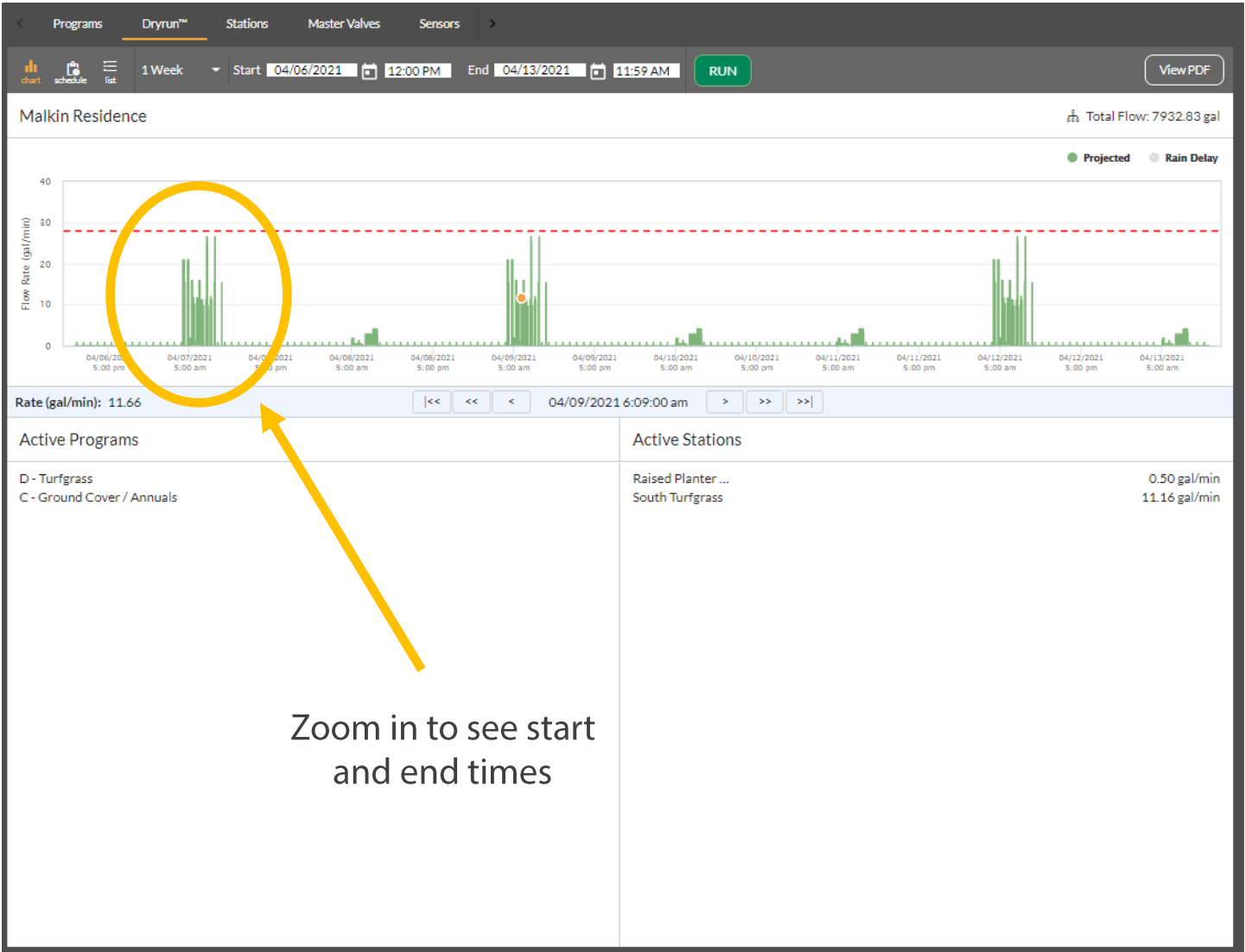
#	Name	Stations	Status	Start	Water Days	Adjust
A	Shrubs - Point Source Drip	2	-	7:00 AM	Su M T W Th F S	100
B	Trees - Point Source Drip	2	-	7:00 AM	Su M T W Th F S	100
C	Planters - Pots	3	-	5:00 AM	Su M T W Th F	100
D	Turfgrass	3	-	4:00 AM	Su M W F	100

# Scheduled Log Retrievals

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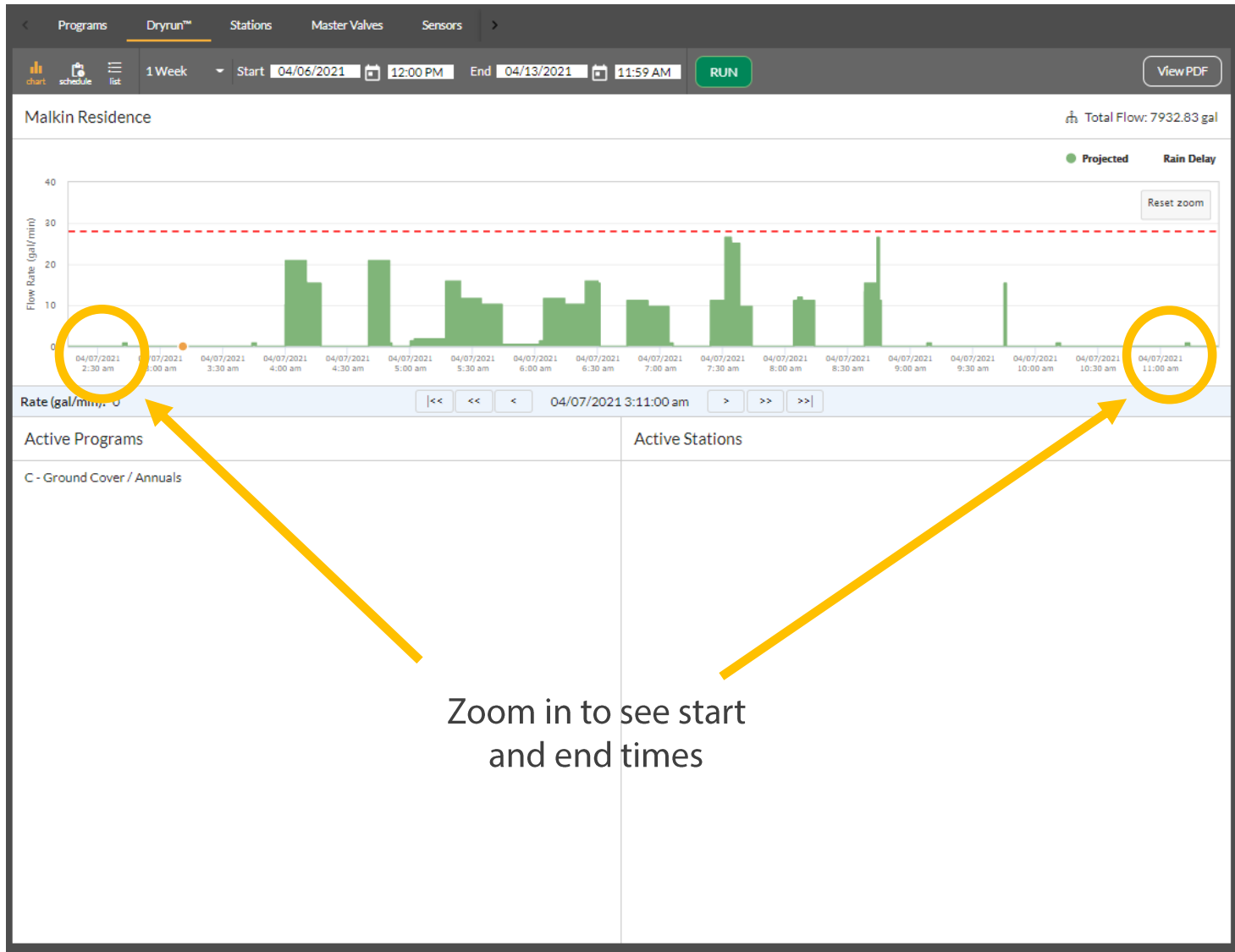
- Best Practices
  - Log retrieval times need to be set AFTER all irrigation has completed. Reports may be incomplete if irrigation is still running when log retrievals are done
  - To assist with selecting good log retrieval times, the new Dryrun™ feature (coming soon) can show you when irrigation will end so you can properly schedule log retrieval times
    - Chart view
    - List view
    - Schedule view
  - Example: In the following slides, you can see both the start and end times with a Dryrun™ to allow for correct scheduling of the synchronization and log retrieval times

# Scheduled Log Retrievals



Zoom in to see start and end times

# Scheduled Log Retrievals



Zoom in to see start and end times

# Scheduled Log Retrievals

Programs Dryrun™ Stations Master Valves Sensors

schedule 1 Week Start 04/06/2021 12:00 PM End 04/13/2021 11:59 AM RUN View PDF

Main Residence Total Flow: 7932.83 gal

Type	Scheduled Start	Projected Start	Projected End		
Ground Cover / Annuals	5:00 am	04/06/2021 5:00 am	04/07/2021 4:51 am		
		04/07/2021 5:00 am	04/08/2021 3:45 am		
		04/08/2021 5:00 am	04/09/2021 4:51 am		
		04/09/2021 5:00 am	04/10/2021 3:45 am		
		04/10/2021 5:00 am	04/11/2021 4:47 am		
		04/11/2021 5:00 am	04/12/2021 4:51 am		
		04/12/2021 5:00 am	04/13/2021 3:45 am		
Shrubs	7:00 am	04/06/2021 8:06 am	04/06/2021 8:47 am		
		04/08/2021 8:06 am	04/08/2021 8:47 am		
		04/10/2021 8:06 am	04/10/2021 8:47 am		
		04/11/2021 8:06 am	04/11/2021 8:47 am		
		04/13/2021 8:06 am	04/13/2021 8:47 am		
		Trees	7:00 am	04/06/2021 7:00 am	04/06/2021 8:06 am
				04/08/2021 7:00 am	04/08/2021 8:06 am
04/10/2021 7:00 am	04/10/2021 8:06 am				
04/11/2021 7:00 am	04/11/2021 8:06 am				
04/13/2021 7:00 am	04/13/2021 8:06 am				
Turfgrass	4:00 am	04/07/2021 4:00 am	04/07/2021 9:45 am		

Select Schedule button

Easily see start and end times



# Scheduled Log Retrievals

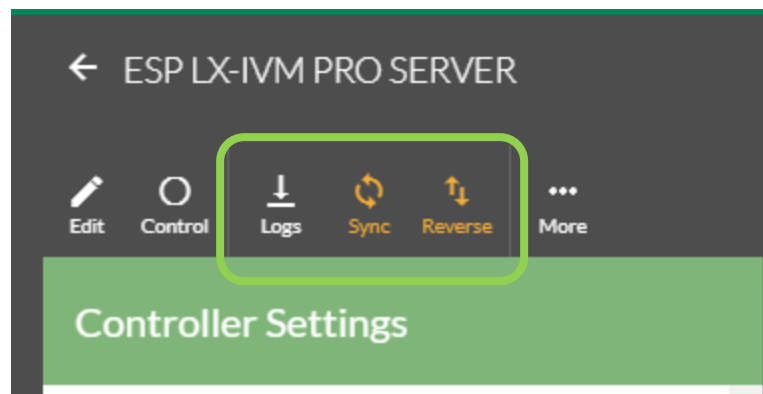
**Malkin Residence** Total Flow: 7932.83 gal

Type	Name	Event	Date	Time ↑
Program	Ground Cover / Annuals	Completed	04/08/2021	3:45 am
Program	Ground Cover / Annuals	Completed	04/10/2021	3:45 am
Program	Ground Cover / Annuals	Completed	04/13/2021	3:45 am
Program	Turfgrass	Started	04/07/2021	4:00 am
Prog	Select List button	Started	04/09/2021	4:00 am
Program	Turfgrass	Started	04/12/2021	4:00 am
Program	Ground Cover / Annuals	Completed	04/11/2021	4:47 am
Program	Ground Cover / Annuals		10/21	4:51 am
Program	Ground Cover / Annuals		10/21	4:51 am
Program	Ground Cover / Annuals		10/21	4:51 am
Program	Ground Cover / Annuals		10/21	5:00 am
Program	Ground Cover / Annuals		10/21	5:00 am
Program	Ground Cover / Annuals	Started	04/08/2021	5:00 am
Program	Ground Cover / Annuals	Started	04/09/2021	5:00 am
Program	Ground Cover / Annuals	Started	04/10/2021	5:00 am
Program	Ground Cover / Annuals	Started	04/11/2021	5:00 am
Program	Ground Cover / Annuals	Started	04/12/2021	5:00 am
Program	Ground Cover / Annuals	Started	04/13/2021	5:00 am
Program	Trees	Started	04/06/2021	7:00 am

# Tips and Tricks

When a new controller is setup, IQ4 is setup to perform a Reverse Sync as soon as the initial controller parameters are saved

Synchronization, Reverse Synchronization and Log Retrieval can be done manually by clicking on the Sync, Reverse or Logs buttons when needed



# FREQUENTLY ASKED QUESTIONS

# FAQs

- If you do not make a change in IQ4 during the day, when does IQ4 Auto Sync?
  - If you do not make changes, IQ4 will not Auto Sync, UNLESS you are using Simple ET
  - In that case, IQ4 will check and calculate current ET approximately 1 hour before your scheduled Simple ET Program and then perform an Auto Sync

# FAQs

- Does IQ4 Auto Sync occur every hour?
  - IQ4 does NOT Auto Sync every hour. IQ4 will only Auto Sync if it detects changes were made. The 1 hour is just the minimum amount of time to wait after the last change was made before beginning an Auto Sync.
  - If there are no changes, IQ4 does not Auto Sync.

# FAQs

- If irrigation is occurring and IQ4 cannot Auto Sync before Program Start Times, does the user get a notification of failed Auto Sync?
  - Yes, the following Alarm is generated in the IQ4 Event Log:
    - Synchronize skipped because irrigation is in progress..

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