

MCT Cloud Services

MCT4 - 1/4 DIN Controller

A 1/4 DIN multi-loop controller that operates like your favorite smartphone or tablet

EASY TO USE
TOUCH SCREEN
INTERFACE



Combines multiple control and monitor components into a single, low cost solution

Technical Assistance

If you encounter a problem with your MCT series controller, review all of your configuration information to verify that your selections are consistent with your application: inputs; outputs; alarms; limits; etc. If the problem persists after checking the above, you can get technical assistance by dialing +1 (866) 342-5332 or by faxing your request to +1 (866) 332-8014, Monday thru Friday, 8:00 a.m. to 5:00 p.m. Eastern Standard Time. You can also email your request to support@futuredesigncontrols.com.

An applications engineer will discuss your application with you.

Please have the following information available:

- Complete Model #'s and/or Serial #'s for Component(s) in Question
- Complete Software Version #'s
- All Configuration Information
- All User Manuals

Warranty and return information is on the back cover of this manual.

Comments

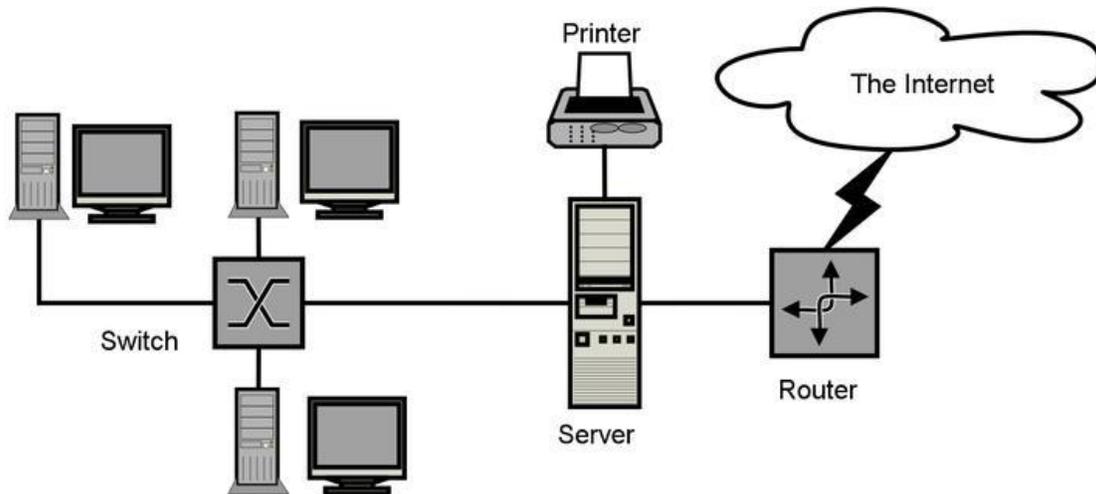
Your comments or suggestions on this manual are welcome. Please send them to:
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Telephone: +1 (888) 751-5444; fax: +1 (888) 307-8014
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1 What is the Cloud?

What is the cloud? This is most likely a question you've heard or even asked yourself. The term "cloud computing" is everywhere. In the simplest terms, cloud computing means storing and accessing data and programs over the Internet instead of your computer's hard drive. The cloud is just a metaphor for the Internet. Go back to the days of flowcharts and presentations where the server-farm infrastructure of the internet was nothing but a puffy, white cloud that accepted connections and provided information as it floated in space.



It is the "catchy" buzz word because it sounds better to say "cloud storage" than "internet storage" for example. The cloud infers a sense of vastness like that of the big open sky where all things can be, while the word "internet" has been a term we have all known of and used since dial-up internet was the latest technology. When we think of the internet, it just holds that singular reference of the connection to the outside world.

What cloud computing is not, is about your hard drive. When you store data on, or run programs from the hard drive, that's called local storage and computing. Everything you need is physically close to you, which means accessing your data is fast and easy for that one computer, or others on the local network. The cloud is also not about having a resident server or dedicated network attached storage (NAS). Storing data on a home or office network does not count as utilizing the cloud. However, some NAS will let you remotely access things over the Internet, such as "My Cloud" from Western Digital just to keep things confusing.

For it to be considered "cloud computing," you need to access your data or your programs over the Internet, or at the very least, have that data synced with other information over the Web. In a business, you may know all there is to know about what's on the other side of the connection; as an individual user, you may never have any idea what kind of massive data processing is happening on the other end. The end result is the same: with an online connection, cloud computing can be done anywhere, anytime as long as you have an internet connection.

Many of us already use the cloud, maybe without even realizing it. The lines between local computing and cloud computing sometimes get blurry. That's because the cloud is part of almost everything on our computers these days. You can easily have a local piece of software (for instance, Microsoft Office 365) that utilizes a form of cloud computing for storage (Microsoft OneDrive). Microsoft also offers a set of Web-based applications, Office Online, that are Internet-only versions of Word, Excel, PowerPoint, and OneNote accessed via your Web browser without installing anything. That makes them a version of cloud computing (Web-based = cloud).

2 MCT LAN/WAN/Cloud Interfaces

The MCT series product line offers several types of data services including FTP, FileWeb and DataWeb. These services can be implemented on a LAN (local area network) like a home or office network as well as on a WAN (wide area network) also known as the internet (or cloud). The flexibility of the MCT data services caters to the service requirements of the customer and can be expanded as requirements grow.

Future Design Controls provides a free cloud service (FDCutil.com) that customers can use to test the data services offered in the MCT and also offers free storage for up to 250 configuration files (at the time of this printing). This allows an MCT to be configured anywhere, anytime as long as an internet connection is available. Same principle as restoring the configuration on your favorite smartphone or tablet.

2.1 FTP Interface

What is FTP? FTP is short for File Transfer Protocol. FTP servers have been around for many years and can be installed on local or network machines. We have all encountered FTP out there already. Have you ever downloaded the latest version of Firefox or grabbed MP3s from someone's personal server halfway around the world? Then you have probably used FTP without even knowing it. Today's web browsers allow you to download files via FTP from within the browser window. It's very convenient, and it's great for those times you need to download a file or two, but the browser-download method does not offer much in the realm of flexibility.

An FTP server allows a client (in this case the MCT) to transfer files to the FTP server. This allows for manual and automatic backup of data from the MCT. The FTP interface of the MCT allows for remote storage of all data files, alarm history files and audit trail files contained within the local storage memory of the MCT without having to touch the unit. Once the FTP server data has been entered into the MCT, the MCT can back up the data every night as well as delete it from its internal memory in order to keep free space available for additional files. Having the files automatically stored on an FTP server also provides easy access to anyone that requires them without having to be in the physical presence of the MCT to view the files.

FTP is a session based interface with the MCT supporting "passive" mode operation. Once the session is started, the MCT client (device) can establish a connection with the FTP server using a username and password or anonymously (no username or password). The connection authentication is only used when the session is started with the session being continued until the MCT device closes the session or the session is closed by the FTP remote server (could be for many reasons).

2.2 FileWeb Interface

The FileWeb interface is similar to FTP in that it allows the MCT to transfer its files to a web site for download which can then be accessed using a standard web browser. This interface provides the user the ability to setup a web site to store files for local or global access without installing an FTP server.

FileWeb is also a more secure interface. The MCT can FTP files either anonymously or with a user name and password for secure FTP. However, FileWeb uses a secure connection ("https://" connection where data is encrypted for transfer) and requires a user name and password or files will not be transferred to the website. The user name and password are also validated for each file transferred, unlike FTP where once the login is made, any number of files can be transferred until the sessions is closed without re-verifying the login credentials during each file transfer.

Once the FileWeb server data has been entered into the MCT, the MCT can back up the data every night as well as delete it from its internal memory in order to keep free space available for additional files. Having the

files automatically stored on an FileWeb server also provides easy access to anyone that requires them without having to be in the physical presence of the MCT to view the files.

2.3 DataWeb Interface

The DataWeb interface provides for the transfer of secure real time data which can be shared and viewed across networks for real time manufacturing systems or any data base that supports SQL (MySQL, SQL, Oracle, etc.) commands. Instead of transferring multiple files for backup like the FTP and FileWeb interfaces, the DataWeb interface transfers records (i.e. MCT device PV, SP & %Output data) in real time based on the log setup interval at the MCT. When logging is started at the MCT, data will begin transfer to the server-side site with real time data which matches the interval set at the MCT device.

The fastest data will be transferred to the site is at 1-minute intervals. If the data log rate at the MCT is set to 1 second for example, the data in each transfer contains 60 readings of all programmed variables from the MCT device. If the logging rate is set for 1 minute, each minute the MCT device will send a single reading of all programmed variables to the DataWeb server's database.

We all use individual files to store data locally. When using an Excel file for example, we might put names and addresses in each column of the file as well as other data for each contact. We also create additional spreadsheets (or files) for different type of contacts or relationships between entry types. This works well for small groups of data that we track that have close associations between the data inside the file. We often find that we have many files in directories that store multiple types of data relations. When we are looking for data, we look the through the directory for the file name and then search through the file. We also know as data builds up we end up with lots of files to sort through and the data inside the file is not accessible to others easily.

We all use databases as well, we use an order entry (or some other entry) system where fields are provided for name, address, etc. When searching for information in a database we use keyword(s) to find every record that matches the keyword. It's much faster than looking through individual files for the data and can be accessed by all who have been given permissions to do a search (including automated systems making SQL calls within the database). The browser search engines we use display results from a large array of data across the internet.

The MCT DataWeb allows each MCT device to be connected to a larger database system rather than a file based only system. This means once the database is setup, many MCT devices can be connected and their data displayed, sorted, searched through, charted or displayed in any manner supported on the server-side database.

Consider the following example:

We have five MCT devices in different locations connected to the same web server data base.

MCT1	ID1 set for 16640Oven1
MCT2	ID1 set for 16641Oven2
MCT3	ID1 set for 16642Oven3
MCT4	ID1 set for 16642Oven4
MCT5	ID1 set for 16644Oven5

Each of the 5 MCT devices have their data log rate set for 1 minute. Using a web browser with access to the secure site (<https://>), a user could search for 16640Oven1 with a time stamp on the data from a specific date and time range (i.e 10/12/2018, 8:00AM to 4:00AM). The browser interface could then show this specific oven's data for the given time frame in tabular, trend or other graphic representation of the data.

Other automated systems within the company's network could also make SQL queries to the same database which might display data from the MCT devices on network stations (or other devices) in specific areas of

operation where required. These queries are always made from the database, never the actual MCT device itself, and the MCT device will not respond to any command from a remote sever for security reasons.

2.4 Cloud Controller Configuration

The cloud controller configuration interface of the MCT provides a means to globally configure any MCT through the touch of a button as long as an internet connection is available. Unlike the FTP, FileWeb and DataWeb interfaces that only allow the user to store files and data, the cloud configuration provides the user with the ability to both export and import MCT configurations to/from the cloud. Coupled with the free configuration storage service provided at the Future Design Controls FDCUtil.com website, users can store their configurations remotely, and then import it to any number of MCT units throughout the world.

To prevent any tampering of the configuration files, each file is encrypted and embedded with a digital signature to ensure data integrity. If an attempt is made to load a configuration file that has been tampered with or altered in any way, it will fail multiple encrypted security checks which will prevent the user from importing bad data or altering the configuration of the MCT device.

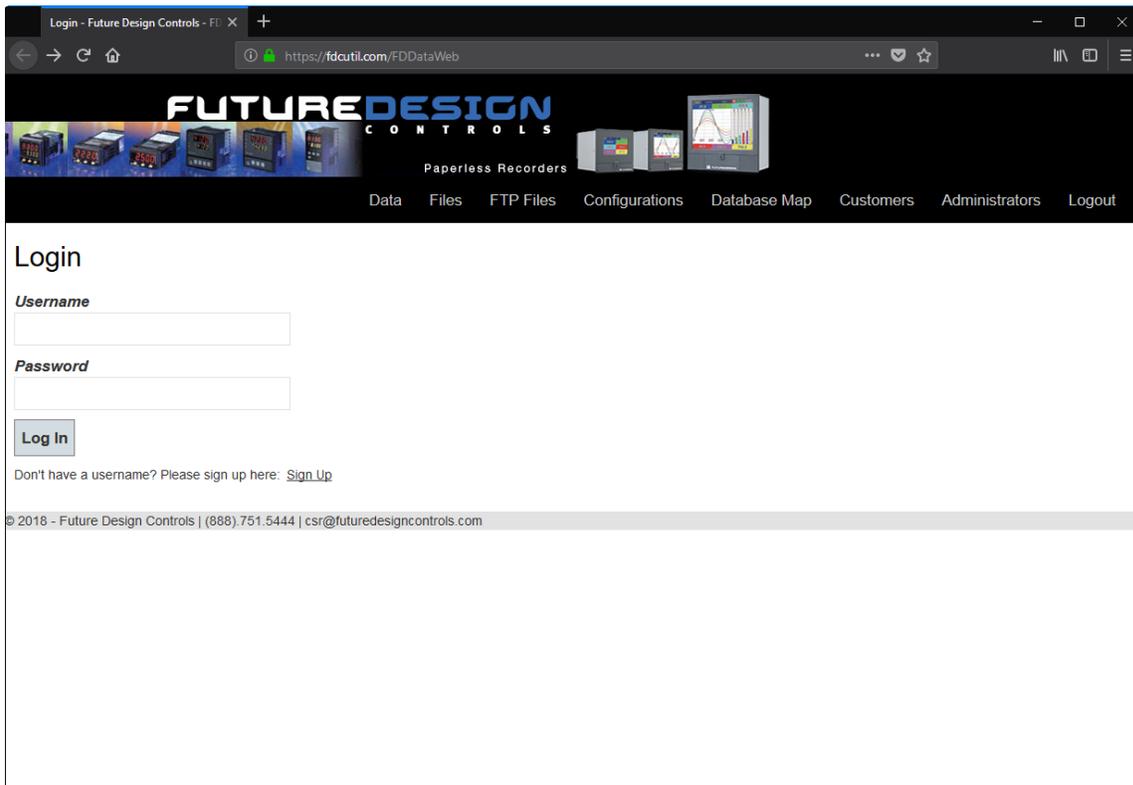
3 FDCUtil.com Website

The [FDCUtil.com](http://fdcutil.com) website is a Future Design Controls (http/https) site that allows customers to create a free account and test the FTP, FileWeb and DataWeb interfaces offered on the MCT. It also provides each account with the storage capacity of up to 250 configuration files. The site automatically deletes data files (not configuration files) every 60 minutes since this is a test site, and cannot be used for permanent web storage of data files.

The site allows customers to fully test and verify that data is being transferred properly from the MCT device to the site thereby providing everything needed to test the MCT and the Internet connection without requiring additional software or development. This allows the customer to test the interface and pick which type of data transfer is the best for operations. It also allows any customer to test their connectivity when having issues during setup of their own IT servers (for FTP, FileWeb, etc.).

3.1 Create an Account

To create a free account, go to the following link: <https://fdcutil.com/FDDataWeb/>



Click on the “Sign Up” link. Enter your name, company name, email address and password. Note that your email address will not be used for solicitation purposes. It is used to send an account verification email. The email sent requires no confirming information; it only verifies that a real user got the email before activating the account. Although FdcUtil.com is a no-charge site, important user data is encrypted for additional protection.

Sign Up - Future Design Controls × +

https://fdcutil.com/FDDataWeb/Login/Register



FUTUREDESIGN
CONTROLS

Paperless Recorders

Data Files FTP Files Configurations Database Map Customers Administrators Logout

Sign Up

Name

Company Name

Email Address

Username

Password

Confirm Password

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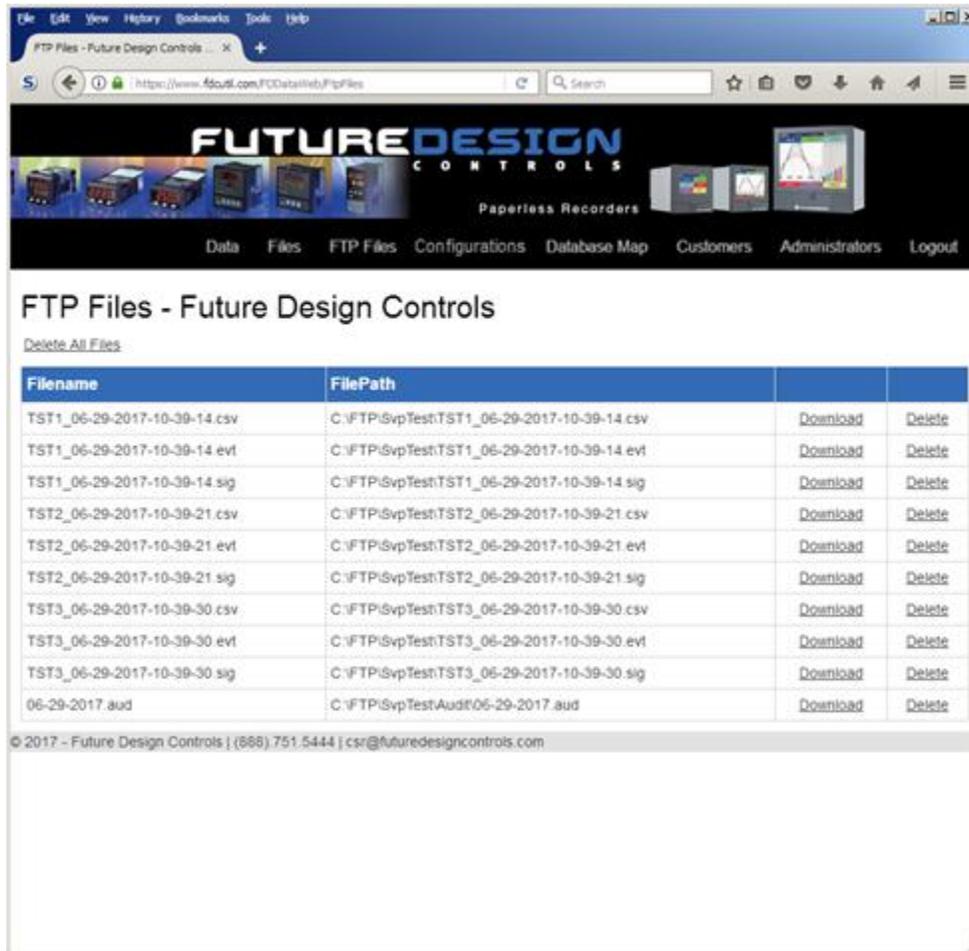
3.2 Accessing Your Account

Once you have created and verified your account, you can log in to the website. Once logged in, the main FDCUtil website will be displayed with tabs for Data (DataWeb), Files (FileWeb), FTP Files (FTP) and Configurations. These tabs can be clicked on and will display data after transfer from the MCT device. After 2 hours, the data will be deleted from each section (except for Configurations) or the data can be manually deleted using the “Delete” link on each page.



3.2.1 FTP Files Page

The FTP files page, accessible from the “FTP Files” menu item, lists the files in the customer’s FTP data directory. These are only the files in the customer’s directory, not all uploads. The user can delete the files from this page.

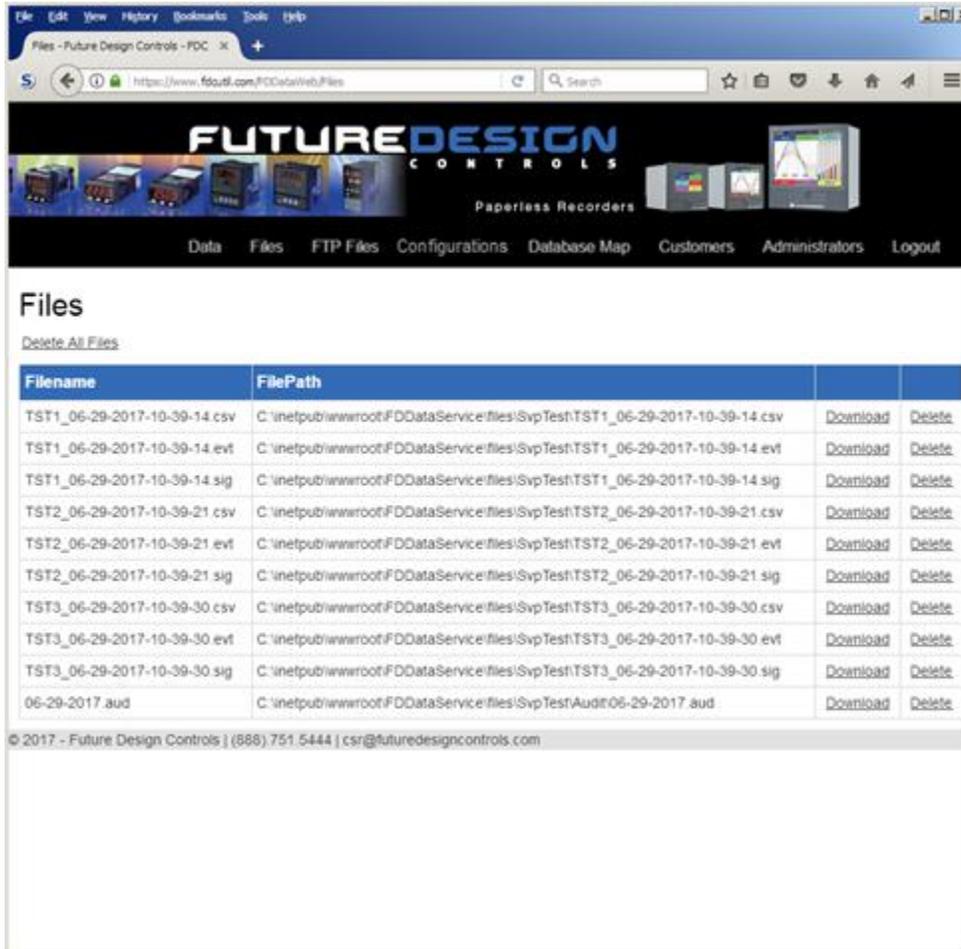


To setup the MCT for use with the FDCutil.com FTP server, contact Future Design Controls technical support for FTP access. The FTP section of FDCutil.com is used for tech support (pass/fail) testing only when validation is required at a customer site (customer site not working for some reason). This is due to the user based security in the FileWeb/DataWeb interfaces not included in the FTP services.

After FTP access is given by FDC technical support, press the “Save” button to complete the setup on the MCT FTP/WAN screen. Press the “Start” button to begin a manual transfer of files from the MCT to the FDCutil.com site. Login to the FDCutil.com site to view the FTP files by pressing on the FTP files link on the page (or press FTP link if already logged into FDCutil.com).

3.2.2 Data Files Page (FileWeb)

The data files page, accessible from the “Files” menu item, lists the files in the customer’s data directory. These are only the files in the customer’s directory, not all uploads. The user can delete the files from this page.



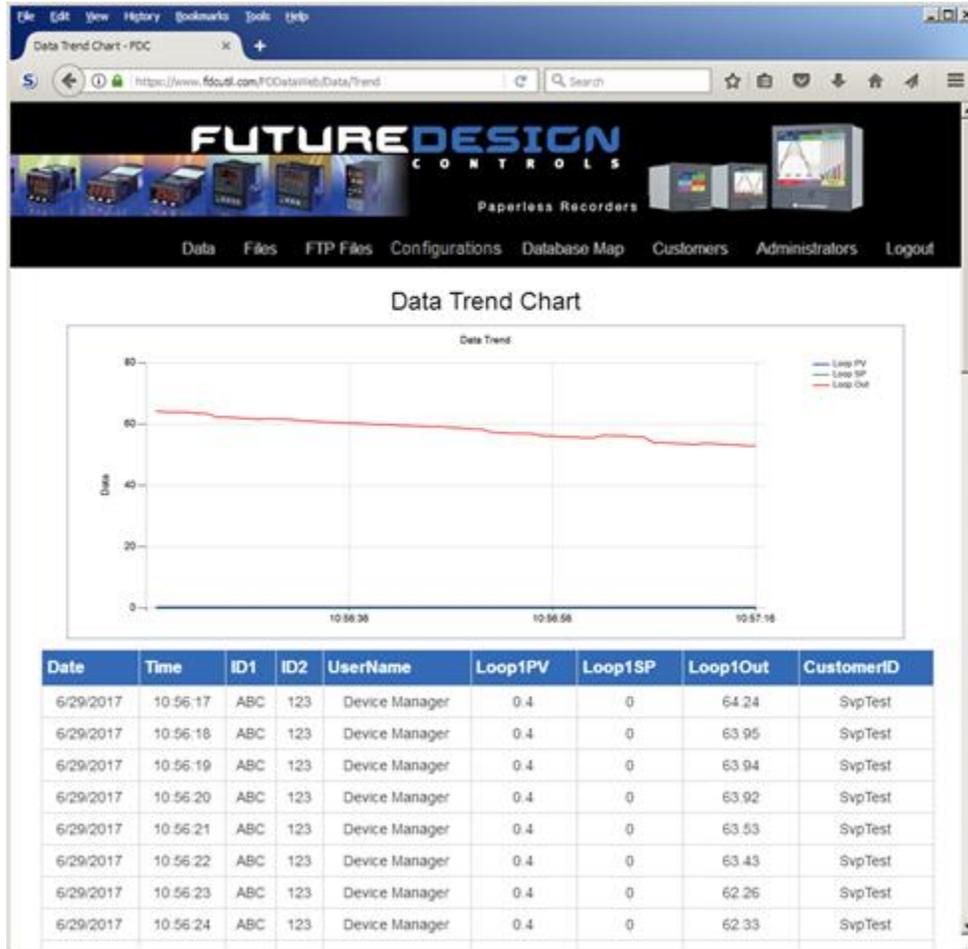
To setup the MCT for use with the FDCutil.com FileWeb server, go to the FTP/WAN screen on the MCT and enter the following data into the screen fields. Make sure to replace the “custName” and “custPassword” text below with the actual user name/password entered during the FDCutil.com signup process.

Type = FileWeb
 IP Add = <https://fdcutil.com/FDDataService.svc>
 User = UserNameUsedDuringSignUp
 Password = UserPasswordUsedDuringSignUp
 Server = UserNameUsedDuringSignUp
 Port = not used (can be left at current value)

Press the “Save” button to complete the setup on the MCT FTP/WAN screen. Press the “Start” button to begin a manual transfer of files from the MCT to the FDCutil.com site. Login to the FDCutil.com site to view the data files by pressing on the Files link on the page (or press Files link if already logged into FDCutil.com)

3.2.3 Database Data Page (DataWeb)

Once logged in, the customer will be shown the database data page. If data has been uploaded to the database, it will be displayed on this page. Data records can also be individually deleted. Choices from the Data link allows the user to view tabular data only or tabular data with a trend of the data at the top of the page.



To setup the MCT for use with the FDCutil.com DataWeb server, go to the FTP/WAN screen on the MCT and enter the following data into the screen fields. Make sure to replace the “custName” and “custPassword” text below with the actual user name/password entered during the FDCutil.com signup process.

- Type = DataWeb
- IP Add = https://fdcutil.com/FDDataService.svc
- User = UserNameUsedDuringSignUp
- Password = UserPasswordUsedDuringSignUp
- Server = empty (no characters)
- Port = not used (can be left at current value)

Press the “Save” button to complete the setup on the MCT FTP/WAN screen. When logging is started at the MCT, data will begin transfer to the “Data” section of the server-side site. Data will be transferred to the server at the beginning of logging (one record) with additional records transferred based on the rate that the MCT data log interval is set for. The maximum rate of data transfer is once per minute, so if the logging interval is set to 1 second at the MCT, 60 data records (one for each second) will be transferred to the site once every minute.

4 FDC Cloud “Server” Services

Mooseworks Software is pleased to provide cloud services for Future Design Controls and the MCT devices. We provide:

- Cloud data service setup for FTP, FileWeb and/or DataWeb protocols. This includes server setup, creation of the data service, and database setup for DataWeb. This can be on a client server, or on server hosting we provide.
- Cloud Hosting using Amazon Web Services (AWS).
- Custom service and database development. If you wish to expand the capabilities of the standard cloud storage, we can help provide web user interfaces to data, services for retrieving data, and data analysis tools.
- Mooseworks also provides custom software development services for mobile, industrial, web and desktop platforms.

What to Expect

After an initial consultation, we will:

- Provide a schedule and budget.
- Document exactly what you want the service to do.
- Setup hosting, server, database, service and administrative website.
- Implement and deploy any additional features and capabilities.
- Provide support and maintenance as desired.
- We do not offshore work; you will always have direct contact with the person doing the work.

Pricing Models

We offer choices for pricing:

- Standard setup without hosting charges (same functionality as fdcUtil.com) - \$4200.
- Standard hosting with AWS including support - \$2875 / year.
- Support of client server (not AWS hosting) - \$2500 / year.
- DIY Documentation – interface/data model definitions, and server setup directions - \$2000
- Custom development services:
 - Fixed pricing available for well-defined requirements.
 - Time and material options available for less defined, continuous engagements.

Contact Information

Keith Welch

keith@mooseworkssoftware.com

For more information, please visit <http://mooseworkssoftware.com/>.

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