

11 Glossary

Term	Definition
ACTIVE DEVICE	any device capable of dynamically controlling and/or converting a source of electrical energy by the application of external electrical stimulus
ALLIANCE	cooperatives of up to four (4) <i>FIRST</i> [®] Robotics Competition Teams
ALLIANCE CAPTAIN	The designated student representative from each ALLIANCE in a Playoff MATCH
ALLIANCE STATION	a 22 ft. (~671 cm) wide by 10 ft. (~305 cm) deep by 10 ft. (~305 cm) tall volume formed by, and including three (3) PLAYER STATIONS, an EXCHANGE wall, and 2 in. ALLIANCE colored gaffers tape
ALLIANCE WALL	the structure that separates ROBOTS from DRIVE TEAMS (except the TECHNICIAN) and consists of three (3) PLAYER STATIONS, and an EXCHANGE wall
ARCADE	all elements of the game infrastructure that are required to play <i>FIRST</i> [®] POWER UP SM : the FIELD, SWITCHES, the SCALE, VAULTS, carpet, the POWER CUBES, and all equipment needed for FIELD control, ROBOT control, and scorekeeping
ARCADE FAULT	an error in ARCADE operation that includes, but is not limited to those listed in Section 10.8 MATCH Replays .
AUTO	the first fifteen (0:15) seconds of a MATCH in which ROBOTS operate without any DRIVE TEAM control or input
AUTO LINE	a line of 2 in. (~5 cm), black gaffers tape that is the width of the FIELD and is 10 ft. (~305 cm) from each ALLIANCE WALL to the leading edge of the tape.
AUTO-RUN	The action of a ROBOT that breaks the vertical plane of the AUTO LINE with its BUMPER at any point in the AUTO stage
AUTO QUEST	An action by which an ALLIANCE completes three (3) AUTO-RUNS and has OWNERSHIP of their SWITCH at T=0 of the AUTO stage
BACKUP TEAM	The Team whose ROBOT and DRIVE TEAM replaces another ROBOT and DRIVE TEAM on an ALLIANCE during the Playoff MATCHES
BOOST	a POWER UP which Error! Reference source not found. of the ALLIANCE'S SWITCH, SCALE, or both from one (1) point per second to two (2) points per second
BRICKS	graphics depicting golden squares surrounded by a black outline that extends 12 in. (~30cm) above the surface of the PLATFORM
BUMPER	a required assembly which attaches to the ROBOT frame. BUMPERS are important because they protect ROBOTS from damaging/being damaged by other ROBOTS and FIELD elements
BUMPER ZONE	the volume contained between the floor and a virtual horizontal plane 7 in. (~17 cm) above the floor in reference to the ROBOT standing normally on a flat floor
BYPASSED	any ROBOT which is unable or ineligible to participate in that MATCH as determined by the FTA, LRI, or Head REFEREE resulting in a ROBOT which is disabled
CAW	Cost Accounting Worksheet
CLIMBING	A ROBOT fully supported by the SCALE (either directly or transitively) with BUMPERS fully above the BRICKS at T=0, not in direct contact with their PLATFORM, and not at all in the opponent's PLATFORM ZONE
COACH	a precollege student or adult mentor member of the DRIVE TEAM a guide or advisor
COMPONENT	any part in its most basic configuration, which cannot be disassembled without damaging or destroying the part or altering its fundamental function



COTS	a standard (i.e. not custom order) part commonly available from a VENDOR for all teams for purchase. To be a COTS item, the COMPONENT or MECHANISM must be in an unaltered, unmodified state (with the exception of installation or modification of any software)
CUSTOM CIRCUIT	any electrical COMPONENT of the ROBOT other than motors, pneumatic solenoids, roboRIO, PDP, PCM, VRM, RSL, 120A breaker, motor controllers, relay modules (per R35-B), wireless bridge, or batteries
DISABLED	a state in which a ROBOT is commanded to deactivate all outputs, rendering the ROBOT inoperable for the remainder of the MATCH
DISQUALIFIED	the state of a Team in which they receive zero (0) Match points in a qualification MATCH or causes their ALLIANCE to receive zero (0) Match points in a Playoff MATCH
DRIVER	a precollege student member of the DRIVE TEAM an operator and controller of the ROBOT
DRIVE TEAM	a set of up to five (5) people from the same FIRST Robotics Competition Team responsible for Team performance for a specific a MATCH
ENDGAME	The final thirty (30) seconds of the TELEOP stage
EXCHANGE	a polycarbonate wall 6 ft. 5 ¾ in. (~197 cm) tall by 4 ft. (~122 cm) wide located between PLAYER STATION 1 and PLAYER STATION 2 and used by ROBOTS to deliver POWER CUBES to HUMAN PLAYERS
EXCHANGE ZONE	A rectangular area 4 ft. (~122 cm) wide by 3 ft. (~91 cm) deep and infinitely tall volume bounded by the EXCHANGE wall and 2 in. (~5 cm) ALLIANCE colored gaffers tape. The EXCHANGE ZONE includes the tape, but excludes the wall
FABRICATED ITEM	any COMPONENT or MECHANISM that has been altered, built, cast, constructed, concocted, created, cut, heat treated, machined, manufactured, modified, painted, produced, surface coated, or conjured partially or completely into the final form in which it will be used on the ROBOT
FACE THE BOSS	An action where All three (3) ALLIANCE ROBOTS have CLIMBED or two (2) ROBOTS have CLIMBED and the ALLIANCE has played the LEVITATE POWER UP
FENCE	A structure surrounding a SWITCH made of aluminum shielded by polycarbonate. The FENCE is 12 ft. 9 ½ in. (~390 cm) wide by 4 ft. 8 in. (~142 cm) deep by 1 ft. 6 ¾ in. (~48 cm) tall.
FIELD	a 27 ft. (~823 cm) by 54 ft. (~1646 cm) carpeted area, bound by and including the inward-facing surfaces of the GUARDRAILS, PORTALS, EXCHANGE walls and ALLIANCE WALLS
FIELD STAFF	REFEREES, FTAs, or other staff working around the FIELD
FMS	the electronics core responsible for controlling the FIRST Robotics Competition playing field. The FMS encompasses all field electronics, including the computers, REFEREE touchscreens, wireless access point, sensors, stack lights, E-Stops, etc.
FORCE	A POWER UP which earns OWNERSHIP points from an ALLIANCE'S SWITCH, SCALE, or both regardless of PLATE position
FOUL	a penalty assessed by a REFEREE upon a rule violation resulting in 5 points credited towards the opponent's total score
FRAME PERIMETER	the polygon contained within the BUMPER ZONE, that is comprised of fixed, non-articulated structural elements of the ROBOT
FTA	a FIRST Technical Advisor
GUARDRAIL	a system that consists of transparent polycarbonate supported on the top and bottom by aluminum extrusion. The GUARDRAIL prevents ROBOTS from inadvertently exiting the FIELD during a MATCH
HUMAN PLAYER	a pre-college student DRIVE TEAM member responsible for managing a POWER CUBE manager



KOP	Kit of Parts, the collection of items listed on any Kickoff Kit Checklists, distributed via <i>FIRST</i> ® Choice, or paid for completely (except shipping) with a Product Donation Voucher (PDV)
LEVITATE	A POWER UP which earns an ALLIANCE an additional CLIMBING ROBOT
LINEUP	The list of three (3) Teams participating in the MATCH and their selected PLAYER STATIONS
LRI	Lead ROBOT Inspector
MATCH	a two (2) minute and thirty (30) second period of time in which ALLIANCES play <i>FIRST POWER UP</i>
MECHANISM	a COTS or custom assembly of COMPONENTS that provide specific functionality on the ROBOT. A MECHANISM can be disassembled (and then reassembled) into individual COMPONENTS without damage to the parts
MXP	MyRIO eXpansion Port, the expansion port on the roboRIO
NULL TERRITORY	one of two, 7 ft. 11 ¼ in. (~242 cm) wide by 6 ft. (~183 cm) deep and infinitely tall volumes formed by 2 in. (~5 cm), white gaffers tape and the GUARDRAILS. The NULL TERRITORY includes the gaffers tape, but excludes the GUARDRAILS. The ALLIANCE'S NULL TERRITORY for a MATCH corresponds to the SCALE PLATE color in that NULL TERRITORY and does not change when the FORCE POWER UP is played
OPERATOR CONSOLE	the set of COMPONENTS and MECHANISMS used by the DRIVERS and/or HUMAN PLAYER to relay commands to the ROBOT
OUTRIGGERS	supports for the TOWER constructed from aluminum shielded by polycarbonate
OWNERSHIP	a state of the ALLIANCE'S SWITCH or SCALE where it is tilted in favor of an ALLIANCE colored PLATE, such that the outside edge of the ALLIANCE colored PLATE is at or less than a specified height above the carpet
PARKING	A ROBOT fully supported by the SCALE (either directly or transitively), not at all in the opponent's PLATFORM ZONE, and has not CLIMBED
PASSIVE CONDUCTORS	any device or circuit whose capability is limited to the conduction and/or static regulation of the electrical energy applied to it (e.g. wire, splices, connectors, printed wiring board, etc.)
PCM	Pneumatic Control Module
PDP	Power Distribution Panel
PLAYER STATION	one (1) of three (3) assigned positions in an ALLIANCE WALL from where a DRIVE TEAM operates their ROBOT
PLATE	A 3 ft. (~91 cm) wide and 4 ft. (~122 cm) deep. The outside edges of the two PLATES are 15 ft. (~457 cm) apart. Each PLATE has four polycarbonate walls which contain Philips Color Kinetics LED lights. The wall closest to the center of the FIELD extends 1 ft. 3 in. (~38 cm) above the PLATE surface. The other walls extend up 3 ½ in (~9 cm) above the PLATE surface surrounded by four (4) polycarbonate walls which contain Philips Color Kinetics LED lights
PLATFORM	one of two (2) 8 ft. 8 in. (~264 cm) wide by 3 ft. 5 ¼ in. (~105 cm) deep and 3 ½ in. (~9 cm) tall surfaces located at the base of the SCALE and covered with ALLIANCE colored HDPE
PLATFORM ZONE	a 11 ft. 1 ½ in. (~339 cm) wide by 9 ft. 11 ¾ in. (~304 cm) deep and infinitely tall volume bounded by 2 in. (~5 cm) ALLIANCE colored gaffers tape, the faces of the OUTRIGGERS, TOWER, and the SWITCH. The PLATFORM ZONE includes the gaffers tape, but excludes the SWITCH and the faces of the OUTRIGGERS AND TOWER
PORTAL	a 4 ft. (~122 cm) wide by 12 ft. 11 in. (~394 cm) deep infinitely tall volume bounded by, and including, 2 in. (~5 cm). ALLIANCE colored gaffers tape and the PORTAL wall.
POWER CUBE	The game piece used to affect the position of the SCALE and SWITCH PLATES, and can be traded in for POWER UPS. A POWER CUBE is a 1 ft. 1 in. (~33 cm) wide by 1 ft. 1 in. (~33 cm) deep by 11 in. (~27 cm) tall HDPE milk crate covered in a yellow nylon (600 Denier) cover



POWER CUBE PILE	The collection of POWER CUBES in a pyramid formation, with six on the bottom, three in the middle, and one on top, justified toward the SWITCH
POWER CUBE ZONE	A rectangular area 3 ft. 9 in. (~114 cm) wide by 3 ft. 6 in. (~107 cm) deep, bounded by the SWITCH and 2 in. (~5 cm) ALLIANCE colored gaffers tape. The POWER CUBE ZONE includes the gaffers tape, but excludes the SWITCH
POWER UP	advantages an ALLIANCE can earn and play throughout the TELEOP stage of the MATCH
RED CARD	a penalty assessed for egregious ROBOT or Team member behavior, or rule violations, which results in a Team being DISQUALIFIED for the MATCH
RETURN	a 1ft. 2 in. (~36 cm) square, centered above the lower opening and is located 1 ft. 8 in. (~51 cm) above the carpet
REFEREE	an official who is certified by <i>FIRST</i> to enforce the rules of <i>FIRST</i> POWER UP
ROBOT	an electromechanical assembly built by the <i>FIRST</i> [®] Robotics Competition Team to perform specific tasks when competing in <i>FIRST</i> [®] POWER UP SM . The ROBOT must include all of the basic systems required to be an active participant in the game – power, communications, control, BUMPERS, and movement. The ROBOT implementation must obviously follow a design approach intended to play <i>FIRST</i> POWER UP
RP	Ranking Point, a unit credited to a Team based on their ALLIANCE'S performance in Qualification MATCHES
RS	Ranking Score, the total number of Ranking Points earned by a Team throughout their Qualification MATCHES divided by the number of MATCHES they've been scheduled to play (minus any SURROGATE MATCH), then truncated to two (2) decimal places
RSL	ROBOT Signal Light
RUNG	One of two (2) 1 ft. 1 in. (~33 cm) long 1 ¼ in. Schedule 40 aluminum pipe supported by 2 in. (~5 cm) box tubing. Each RUNG extends 8 ¼ in. (~21 cm). from the vertical face of the SCALE supports and 7 ft. (~213 cm) from the carpet to the top of the RUNG
SCALE	A FIELD assembly that features an arm, RUNGS, PLATES, OUTRIGGERS, PLATFORMS, and TOWER
SIGNAL LEVEL	circuits which draw ≤1A continuous and have a source incapable of delivering >1A, including but not limited to roboRIO non-PWM outputs, CAN signals, PCM Solenoid outputs, VRM 500mA outputs and Arduino outputs
STARTING CONFIGURATION	the physical configuration and orientation of the ROBOT at the beginning of the MATCH where no part of the ROBOT shall extend outside the vertical projection of the FRAME PERIMETER, with the exception of its BUMPERS and minor protrusions such as bolt heads, fastener ends, rivets, cable ties, etc.
STARTING LINE	a line of 2 in. (~5 cm), white gaffers tape that runs the width of the carpet and is 2 ft. 6 in. (~76 cm) behind the ALLIANCE WALL diamond plate
SURROGATE	a Team randomly assigned by the FIELD Management System to play an extra Qualification MATCH
SWITCH	One of two (2) FIELD assemblies centered across the width of the FIELD, with the center of the SWITCH located 14 ft. (~427 cm) from the ALLIANCE STATION
TECH FOUL	25 points credited towards the opponent's total score
TECHNICIAN	a precollege student member of the DRIVE TEAM who is a resource for ROBOT troubleshooting, setup, and removal from the FIELD
TELEOP	the second stage in a MATCH and is two minutes and fifteen seconds (2:15) long
TIMEOUT	a period of up to six (6) minutes between MATCHES which is used to pause Playoff MATCH progression
TOWER	the central structure of the SCALE constructed from aluminum shielded by polycarbonate which supports the RUNGS and SCALE PLATES



VAULT	an aluminum and plastic structure used by HUMAN PLAYERS to turn POWER CUBES in to POWER UPS
VENDOR	a legitimate business source for COTS items that satisfies criteria listed in Section 8.1 Overview
VRM	Voltage Regulator Module
WITHHOLDING ALLOWANCE	a static set of FABRICATED ITEMS that shall not exceed 30 lbs. (~13 kg.), brought to an event (or ROBOT Access Period) in addition to the bagged items, to be used to repair and/or upgrade their ROBOT
YELLOW CARD	a warning issued by the Head REFEREE for egregious ROBOT or Team member behavior or rule violations. A subsequent YELLOW CARD within the same tournament phase will lead to a RED CARD.

